Standard Treatment Guidelines In Homoeopathy

Volume 3

केन्द्रीय होम्योपैथी अनुसंधान परिषद्
Central Council for Research in Homoeopathy,
Ministry of AYUSH, Govt. of India

STANDARD TREATMENT GUIDELINES IN HOMOEOPATHY

Volume 3

Central Council for Research in Homoeopathy,
Ministry of AYUSH, Govt. of India
2021

Standard Treatment Guidelines in Homoeopathy

DISCLAIMER

This Standard Treatment Guidelines (STGs) in Homoeopathy, volume 3, contains STGs on 20 clinical conditions, may prove to be a concise and ready reference. It makes no pretension to being anything more than an introduction to the important conditions; in no sense it is put forward as complete treatise. Readers are advised to check the most current information. These guidelines will facilitate practitioners for helping patients, however, it is the responsibility of the practitioners relying on their clinical experience and knowledge of the patients to make diagnosis, to determine dosages and the best treatment for each individual patient as the homoeopathic principles.

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FOREWORD

There has been a paradigm shift in Health Seeking Approach of people towards wellness care. The recent Positive and Progressive trends in AYUSH sector (Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa-Rigpa and Homoeopathy) have shown the actual potential of the age old scientific medicines of Indian Health Care System. The Ministry of AYUSH has taken so many reform measures to revitalize the India's AYUSH Health Care System, impetus on education policy, R & D, standardization & quality control of medicines and procedures, up gradation of healthcare facilities, development of infrastructure, capacity building of healthcare providers, public health initiatives and the results are highly encouraging.

Standard treatment guidelines outline the preferred treatment for common health problems, keeping the rationality and scientificity of each drug and disease condition. CCRH has accomplished considerable number of observational as well as randomized control trials complying with the modern scientific parameters and research have been undertaken with the goal that the outcome of research translates into practice and the benefit of the research is extended to the profession as well as the public.

Based upon the authoritative textual information, the outcomes of the studies, trials and researches conducted so far and the expert guidance, CCRH has formulated the Standard Treatment Guidelines-Vol. 3. This will be helpful in upbringing not only the profession but also strengthening the whole AYUSH system as well, while benefitting the public. This will also be beneficial in developing evidence based standardized therapeutic approach in Homeopathy.

I am glad to support this continuing venture of CCRH. It is my pleasure to present this publication to the profession and confident that this document shall be of great benefit to all the users. I expect that these STGs shall be further updated based on further research and feedback from the profession from time to time.

(Rajesh Kotecha)

New Delhi
24th March, 2021

PREFACE

The AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha Sowa-Rigpa and Homoeopathy) systems in India, getting involved in several programmes in the last few years have shown to be successful in improving service delivery. Standard Treatment Guidelines (STG) are ‘‘systematically developed statements to assist practitioners and patient decisions about appropriate health care for specific clinical circumstances.’’ They are intended to offer concise instructions on how to provide healthcare services. The most important benefit of clinical practice guidelines is their potential to improve both quality and process of care and clinical outcomes. The comments on earlier STGs published by the Council reviewed by international reviewer, are encouraging and overwhelming.

Realizing the importance of traditional systems of medicines in addressing public health issues, the National Health Policy (NHP) was launched in 2017, mainstreaming the potential of AYUSH systems within a pluralistic system of integrative healthcare. The foremost aim of medical research is to translate research into public benefit. To strengthen the integrative care, more documentation is essential. More the scientific rigour, more tangible are the results and better these would be adopted for users and beneficiaries. The research findings published in different journals are placed logically and up-to-date under different disease conditions will help to reach to every homoeopath and improve the health care delivery.

The guidelines list the preferred treatments for common health problems experienced by people to be used at all levels within the health delivery system, both public and private. These standard treatment guidelines will help to rationalize medical practice. There is an urgent need to protect the population from irrational and unethical practice. Also, educating people and health professionals about the hazards of irrational curative care is another necessity of our times. Rationalizing clinical health care also reduces costs for the public health deliveries and makes the system more effective and reliable.

Subsequent to earlier two volumes of standard treatment guidelines covering 35 clinical conditions, this third volume covers 20 more clinical conditions. This will further enhance the knowledge and improve in documentation skills of homoeopathic practitioners, academicians and students at large. These are: Adhesive capsulitis, Acne, Anxiety disorders, Aphthous stomatitis, Atopic dermatitis, Breast fibroadenoma, Chikungunya, Chronic suppurative otitis media, Diabetic foot ulcer, Diabetic neuropathy, Gout, Migraine, Post-operative pain, Rheumatoid arthritis, Scabies, Sciatica syndrome, Schizophrenia, Sub-clinical hypothyroidism, Tinea and Warts. Similar to earlier ones the STGs in this volume are prepared, based on data from national and international research studies, authoritative texts, expert consensus, scientific evidence of acceptable approaches to diagnosis, management and/or prevention of specific diseases.

The STGs developed are structured and systematically arranged throughout touching upon clinical definition, incidence, aetiology, pathophysiology, diagnosis (clinical presentation, investigations), complications, caution lines, evaluation and assessment with validated scales, general management, homoeopathic management, names of commonly used medicines based on research and experience of experts, indications of medicines (generalities and characteristic particulars).

We hope that the document will truly help in *'Linking Education and Clinical Practice with Research'*, motivating the homeopathic professionals including academicians, clinicians, researchers and teachers to contribute their success stories through case reports, case series and clinical research studies.

Dr. Anil Khurana
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ABBREVIATIONS

ACR	American College of Rheumatology
ACT	Assertive Community Treatment
ADASI	Atopic Dermatitis Area and Severity Index
AD	Atopic Dermatitis
ADSI	Atopic Dermatitis Severity Index
AGEs	Advanced Glycation End products
ASES	American Shoulder and Elbow Surgeons shoulder score
ATTG	Anti-tissue transglutaminase
BAI	Beck Anxiety Inventory
BBCR	Boger Boenninghausen's Characteristics and Repertory
BCSS	Basic Clinical Scoring System
B-IPQ	Brief Illness Perception Questionnaire
BI-RADS	Breast Imaging-Reporting and Data System
BIT	Burrow Ink Test
BMI	Body Mass Index
BMMP	Benign Mucous Membrane Pemphigoid
BNSS	Brief Negative Symptom Scale
BSE	Breast Self-Examination
CAINS	Clinical Assessment Interview for Negative Symptoms
CASS	Clinical Assessment of Schizophrenic Syndromes
CBT	Cognitive Behavioral Therapy
CCRH	Central Council for Research in Homoeopathy
CDLQI	Children's Dermatology Life Quality Index
CDSS	Calgary Depression Scale for Schizophrenia
CES	Chronic Ear Survey
CGI-SCH	Clinical Global Impression Schizophrenia
CHIK	Chikungunya
CI	Confidence Interval
CKD	Chronic Kidney Disease
CMO	Chief Medical Officer
CNS	Central Nervous System
COMOT-15	Chronic Otitis Media Outcome Test 15 questionnaire score
COMQ-12	Chronic Otitis Media Questionnaire 12
COXs	Cyclooxygenases
CRU(H)	Clincial Research Unit (Homoeopathy)
CVD	Cardiovascular disease
CWARTS	Cutaneous WARTS
DALY	Disability Adjusted Life Years
DASH	Disabilities of the Arm Shoulder and Hand score

DASS-2	Depression Anxiety Stress Scales 2
DDSPSS	Diabetic Distal Symmetric Polyneuropathy Symptom Score
DFI	Dermatitis Family Impact
DFU	Diabetic Foot Ulcer
DGP	Deamidated Gliadin Peptide
DLQI	Dermatology Life Quality Index
DN	Diabetic Neuropathy
DNE	Diabetic Neuropathy Examination
DPN	Diabetic Peripheral Neuropathy
DACRRI(H)	Dr. Anjali Chatterjee Regional Research Institute (Homoeopathy)
DDPRCRI(H)	Dr. D P Rastogi Central Research Institute (Homeopathy)
DSM	Diagnostic and Statistical Manual for Mental Diseases
DSQL	Dermatology Specific Quality of Life
Dte.	Directorate
DUSS	Diabetic Ulcer Severity Score
E. coli	Escherichia coli
EASI	Eczema Area and Severity Index
ECG	Electrocardiogram
ECT	Electro-Convulsive Therapy
ELISA	Enzyme-Linked Immunosorbent Sorbent Assay
EMA	Endomysial antibodies
Esp.	Especially
ESR	Erythrocyte Sedimentation Rate
EULAR	European League Against Rheumatism
FDLQ	Family Dermatology Life Quality Index
FLG	Filaggrin
FNAC	Fine Needle Aspiration Cytology
GABA	Gamma Amino Butyric acid
GAD-7	Generalized Anxiety Disorder 7
GAD-Q-IV	Generalized Anxiety Disorder Questionnaire IV
GAIS	Gout Attack Intensity Score
GAMS	Global Assessment of Migraine Severity
GAQ v2.0	Gout Assessment Questionnaire version 2.0
GIS	Gout Impact Scale
GOHAI	Geriatric Oral Health Assessment Index
HADS-A	Hospital Anxiety and Depression Scale-Anxiety
HAM-A	Hamilton Anxiety Rating Scale
HAQ-DI	Health Assessment Questionnaire-Disability Index
HAQ-II	Health Assessment Questionnaire-II
HBO	Hyperbaric Oxygen
HDRI	Homoeopathic Drug Research Institute
HIT-6	Headache Impact Test -6

HOD	Head of Department
HPV	Human Papilloma Virus
HR QoL	Health–Related Quality of Life
HSV	Herpes Simplex Virus
IAC	Idiopathic Adhesive Capsulitis
IACS	International Association of Classification Societies
ICD-10	International Classification of Diseases 10
ICHD	International Classification of Headache Disorders
IDDM	Insulin Dependent Diabetes Mellitus
IDQOL	Infants' Dermatitis Quality of Life Index
Ig E	Immunoglobulin E
KFT	Kidney Function Test
KOH	Potassium hydroxide
LFT	Liver Function Test
LSAS	Leibowitz Social Anxiety Scale
MA	Migraine with Aura
MIDAS	Migraine Disability Assessment Scale
MIRAU	Minor Recurrent Aphthous Ulceration
MLDMHI	Dr. M. L. Dhawale Memorial Homoeopathy Institute
MOH	Medication Overuse Headache
MO	Migraine without aura
MRI	Magnetic Resonance Imaging
MSU	Mono Sodium Urate
NCT	National Capital Territory
NFSG	Non Functional Senior Grade
NHRIMH	National Homoeopathy Research Institute for Mental Health
NIDDM	Non-Insulin Dependent Diabetes Mellitus
NSA -16	Negative Symptom Assessment -16
NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
NTD	Neglected Tropical Disease
NTSS-6	The Neuropathy Total Symptom Score-6
OASIS	Overall Anxiety Severity and Impairment Scale
OCD	Obsessive Compulsive Disorder
OHIP-49	Oral Health Impact Profile 49
PANSS	Positive And Negative Symptoms Scale
PCR	Polymerase Chain Reaction
PHQ-4	Patient Health Questionnaire 4
PMR	Progressive Muscular Relaxation
PSWQ	Penn State Worry Questionnaire
PTSD	Post Traumatic Stress Disorder
RAS	Recurrent Aphthous Stomatitis
RAST	Radio Allegro Sorbent Test

RCT	Randomized Controlled Trial
RNA	Ribo Nucleic Acid
RO(H)	Research Officer (Homoeopathy)
ROM	Restriction of Movement
RR	Relative Risk
RRI(H)	Regional Research Institute (Homoeopathy)
RT-PCR	Reverse Transcription- Polymerase Chain Reaction
S- 1,2,3,4	Scientist- 1,2,3,4
SAG	Senior Advisory Grade
SANS	Scale for Assessment of Negative Symptoms
SAPS	Scale for Assessment of Positive Symptoms
SASSAD	Six-Area, Six-Sign Atopic Dermatitis
SCCR	Special Committee for Clinical Research
SCDPR	Special Committee for Drug Proving Research
SCFR	Special Committee for Fundamental Research
SCORAD	Scoring of Atopic Dermatitis
SRF(H)	Senior Research Fellow (Homoeopathy)
SINBAD	Site, Ischemia, Neuropathy, Bacterial Infection, Area and Depth
SLR	Straight Leg Raising
SNB	Suprascapular Nerve Block
SOL	Space Occupying Lesions
SPADI	Shoulder Pain and Disability Index
SPIN	Social Phobia Inventory
SRF	Senior Research Fellow
STAI	State-Trait Anxiety Inventory
SUA	Serum Uric Acid
TC	Total Cholesterol
TG	Total triglycerides
UG-VAB	Ultrasound-guided Vacuum-Assisted Biopsy
ULT	Urate Lowering Therapy
USS	Ulcer Severity Score
UVA	Ultraviolet rays A
UVB	Ultraviolet rays B
VARS	Visual Aura Rating Scale
VAS	Visual Analogue Scale
WHO	World Health Organization
WIFI	Wound Ischemia and Foot Infection classification
YLD	Years Lived with Disability
°F	Degree Fahrenheit
12-PSS	12-Item Pruritus Severity Score

INTRODUCTION

Quality and standard healthcare delivery is very important for the people of any country. To have quality control and assurance, certain set standards are required to reach the target harmonized healthcare delivery. Standard Treatment Guidelines (STGs), a systematically developed statement designed to assist practitioners and patients in making decisions about appropriate healthcare for specific clinical circumstances are one such document.

Standard Treatment Guidelines (STGs) have been in vogue in India only since recent times and are gaining popularity among practitioners, owing to uniform guidelines. They have the advantage in bringing together patients, healthcare providers, drug manufacturers and marketing agencies, and above all, the policymakers and the legislative system of the country. The drawback in STGs lies in the difficulties in their implementation on a large scale.

Homoeopathy is a holistic system of medicine wherein patients are treated with an individualistic approach. Here the treatment given to each patient is tailored according to his/her need. Quality control and assurance can be achieved by following uniform guidelines that are in consonance with the available homoeopathic literature, modern medicine, research and day-to-day practices. In pursuance to the mandate of the Ministry of AYUSH, Government of India, the Central Council for Research in Homoeopathy has taken a lead and developed standard treatment guidelines for both acute and chronic diseases.

The set of conditions included in STGs is not exhaustive; rather it is based on the conditions recommended for management and treatment in day-to-day practice. It is emphasised that the choices described here have the support of scientific evidence together with the collective opinion of a wide group of recognised experts. Recommended treatments are primarily limited to the medicines that were published in research papers, and/or conform to the opinion of experts as well asexperience in homoeopathic practice. It also covers medicines enlisted in essential drug list (2012).

This document on standard treatment guidelines (STGs) is designed for use by homoeopaths at all the levels delivering health services. The guidelines can also be used by general practitioners in their private practice. The STGs are designed to be used as a guide to treatment choices and as a reference book to help in the overall management of patients, including when to refer.

The research recommendations used have been rated on the following WHO ratings:

1) Evidence rating A — requires at least one randomised control trial as part of a body of scientific literature of overall good quality and consistency addressing the specific recommendation.
2) Evidence rating B — requires the availability of well–conducted clinical studies, but no randomised clinical trials on the topic of recommendation.

3) Evidence rating C — requires evidence obtained from expert committee reports or opinions and/ or clinical experience of respected authorities. This indicates an absence of directly applicable clinical studies of good quality.

The contents of these treatment guidelines will undergo a process of continuous review,for which comments or suggestions for improvement are welcome. Those comments or suggestions for addition of diseases should include evidence of prevalence as well as a draft treatment guideline using the format set out in this book.

How to use this book?

To use these guidelines effectively, it is important that you become familiar with the contents; take time to read the book and understand the contents and layout.

The contents of this book have been arranged in an alphabetical order. Within each section, outcomes of the studies conducted both nationally and internationally have been identified. For each of these disease states, the structuring of the information and guidelines has been standardised to include a brief description of the condition or disease, common signs and symptoms, general management followed homoeopathic treatment choices and flow chart of entire condition.

The book also incorporates the assessment scales used across the globe by researchers and to some extent, by physicians in their practice can also be used for making homoeopathy evidence based system of medicine.

Homoeopathic therapeutics have been suggested, which include the characteristic physical generals, mental and particular symptoms related to the disease. The pattern has been adopted to emphasize on holistic approach of homoeopathic treatment, which forms the fundamental basis of prescription.

Referral

These guidelines also have provision for referral of patients to other health facilities. Patients should be referred when the prescriber is unable to manage the patient either due to lack of personal experience or availability of appropriate facilities. Patients should be referred, in accordance with agreed arrangements, where necessary diagnosis and support facilities exist. The patient should be given a letter or note indicating the problem and what has been done so far, including laboratory tests and treatment. When indicated for referral, minimal treatment must be given before the patient reaches a physician/hospital of referral.

HOMOEOPATHIC MANAGEMENT OF DISEASES

Introduction

Homoeopathy, a therapeutic system of medicine discovered by a German physician, Dr. Christian Friedrich Samuel Hahnemann (1755-1843), in the late eighteenth century based on fundamental idea of similarity (or similia) principle: Similia similibus curentur: "*let likes be treated by likes*". This implies that substances capable of causing disorder in healthy subjects are used as medicines to treat similar patterns of disorder experienced by ill people.[1] These substances in diluted form are believed to stimulate the body's self-regulatory mechanism and a healing response in the body. The other important principles of the system include**:** *Law of Simplex, Law of Minimum Dose, Doctrine of Drug Proving, Theory of Chronic Diseases, Theory of Vital Force, and Doctrine of Drug Dynamization.*

Holistic concept of health and disease

A holistic model of health in Homoeopathy, taking an overview of the patients, including their individual mind, body and spirit, life situation and other circumstances, is central in evolving a curative approach to acute diseases and to some extent chronic diseases too. The holistic view uses the totality and the constitution of each patient to find a remedy that suits him/her, rather than just the disease. This is a paradigm shift from the conventional model of treatment approach, i.e., how illness is viewed.[2, 3]

Selection of medicine

The medicine selected for each patient is tailored to person specific, taking into consideration[4, 5] his/her mental make-up, physical symptoms, and characteristic particulars etc. In case of long term illness, besides the above mentioned factors, age, occupation, previous illnesses and life circumstance unique to that individual irrespective of the disease which he/she is suffering from, are also taken into consideration; thus the dictum *"Homoeopathy treats the patient but not the disease".*

Some organ specific medicines with their symptoms are described for each disease along with the frequently prescribed polychrest medicines in homoeopathic management section. Person specific or individualised medicine selected based on totality of symptom as written above is always to be emphasized for effectiveness. In advance cases when mental symptoms are absent or paucity of totality of symptoms, these rare medicines can be given which gives relief and paves the way to surface the suppressed totality of symptoms for subsequent second prescription for annihilation of disease. But these rare medicines should always be prescribed basing on their keynote symptom which are given for each of the medicines in this book.

1 WHO. Homoeopathy: Overview and analysis of clinical research. December 2006 [unpublished]
2 Fritjof Capra. The Web of Life: A New Scientific Understanding of Living Systems university of Michigan : Anchor Books. 1996
3 David Owen. Principles and Practice of Homeopathy. Elsevier Ltd. Churchill Livingstone.2007
4 Carlston C. Classical Homoeopathy. Philadelphia, Pennsylvania; Elsevier sciences: 2003
5 Hahnemann, S. Organon of Medicine, 5 & 6 Ed. Delhi: Birla Publications, 2003

Selection of potency

After the appropriate medicine is selected, it is essential to decide the requisite potency, dose and repetition which is imperative for optimum response and faster recovery in each case. Different types of potencies such as centesimal/ decimal/ 50 millesimal potencies can be employed for treatment of both acute and chronic diseases. However, selection of potency of the remedy is dependent on various factors like susceptibility of the patient (high or low), type of disease (acute/chronic), seat/ nature and intensity of the disease, stage and duration of the disease and also the previous treatment of the disease.[6] In this context, given below are the basic rules as evolved through experience*:*

- *The closer the similarity a remedy bears to the picture presented by the patient, the higher is the potency, provided no specific contra-indications to the use of high potencies exist in the case.*
- *A prescription that is predominantly determined by the mental symptoms in a case, gives best results when higher potencies are employed.*
- *When prescribing for advanced pathological conditions, it is advised to begin the treatment of the case with a remedy in lower potency.*

Repetition of the remedy

The repetition of the remedy in regard to potency and dosage is almost as important as the selection of the remedy itself. The selection of the remedy can hardly be said to be finished until the potency and dosage have been decided upon. [5, 7,8]

Centesimal scale

- Low potencies may be repeated frequently whereas high potencies are not to be frequently repeated.
- In acute diseases, the medicine may be repeated at very short intervals of every 24, 12, 8, 4 hours or even every 5 minutes.
- In chronic cases, the medicine may be repeated at the interval of 14, 12, 10, 8 or 7 days.
- In chronic diseases resembling cases of acute diseases, the repetition may be made at still shorter intervals. In these cases, either repeated doses of a low potency of the remedy are given till the patient is cured or a single dose of high potency is administered followed by placebo till recovery ensues.

LM scale

- In acute diseases- every 2,3,4,6 hours
- In very urgent cases- every hour or oftener
- In long lasting diseases the medicine may be repeated daily or every second day

6 Close S. The Genius of Homeopathy: Lectures and Essays on Homeopathic Philosophy. New Delhi; B Jain Publishers; 183-211
7 Kent JT. Lectures on Homoeopathic Philosophy. North Atlantic Books, Washington; 1992
8 CCRH. A Handbook on Homoeopathy: Case Taking to Prescribing; New Delhi; CCRH: 2011

Remedy response

After the administration of the similimum, some results are expected. Further prescription largely depends on the response of the patient to the remedy and proper interpretation of the remedy response. The remedy response can be understood in respect to: aggravation, amelioration, disappearance, no change/status quo and change in the order of the symptoms.

1. Aggravation

There are two types of aggravation, either of which may manifest. The first relates to an aggravation of the disease condition, in which the patient becomes worse. Another type of aggravation is where the symptoms of the patient are worse, but the patient feels better. Aggravation of symptoms may manifest in the following manner after the administration of a medicine:

1.1. The aggravation is quick, short and strong with rapid improvement of the patient.

Interpretation: The response of the patient is satisfactory. There is no much tissue change, or very superficial, if any. The potency was a bit higher. The medicine was most similar one. An aggravation of this kind is very much reassuring
Prognosis: Very good
Follow-up action: Wait and watch

1.2. Long aggravation but final and slow improvement.

*I*nterpretation: After a prolonged aggravation, the patient improves slowly. This indicates the beginning of definite structural change in some organs but the disease has not progressed quite so far. The medicine was right but the potency was high. Though there have been enough tissue changes but the medicine would act for a very long time. The patient was on the borderline and had the disease condition gone further, cure would have been impossible.
Prognosis: Favorable
Follow- up action: Not to disturb till the action of the medicine has exhausted.

1.3. A prolonged aggravation and final decline of the patient.

Interpretation: The case is incurable since there has been enough irreversible tissue changes in the patient. The medicine prescribed may or may not have been a correct one but the potency was very high. The medicine was deep acting in nature, therefore, instead of helping it has established destruction.
Prognosis: Bad
Follow up action: It necessitates immediate anti-doting. After re-case taking a more similar medicine in low potency is to be given. Deep acting medicine and high potency should not be used in chronic and doubtful cases especially where tissue-change may have occurred.

1.4. Some patients prove every remedy they get.

*Interpreta*tion: Some patients are hypersensitive and have a tendency to be affected by everything, i.e., they are idiosyncratic. These patients go on to prove every medicine they take and while under the influence of that medicine they are not under the influence of anything else. The medicine has its prodromal period, its period of progress and its period of decline. Such patients are good provers and are often incurable.

Prognosis: They are useful for the purpose of homoeopathic drug proving.

Follow up action: These hypersensitive patients should be given medicine in the lower potencies preferably 30^{th} and 200^{th} both in acute and chronic conditions.

2. Amelioration

When the symptoms are ameliorated, the physician has to observe the pattern in greater detail and note especially the sequence of events, the duration, etc. which will enable the physician to judge whether the amelioration is long lasting or due to the palliation.

2.1 Disappearance of symptoms/no aggravation with recovery of the patient.

Interpretation: The medicine was the most similar one and the potency exactly fitted the case. There was no organic disease or any tendency towards organic change. The trouble was only a functional disorder. This is an example of highest order of cure, mostly in acute disease conditions.

Prognosis: Very good

Follow up action: Wait and watch. Assessment to be done as per the nature of the disease. This case may not require further repetition of medicine.

2.2 The amelioration comes first and the aggravation comes afterwards.

Interpretation: The medicine was palliative in nature, or it was only partially/superficially similar or the patient was incurable and the remedy was somewhat suitable. In-depth assessment may show that in majority of the cases the remedy was only similar to the most grievous symptoms and did not cover the whole case.

Prognosis: Bad

Follow up action: A more similar medicine is to be given after re-case taking.

2.3 Too short relief of the symptoms.

Interpretation:

A) In acute diseases:

1. High grade inflammatory action is present that organs are threatened by the rapid processes going on. The infection is violent/virulent in nature.

B) In chronic disease:

1. The medicine was partially similar, or
2. There is a condition which interferes with the action of the remedy, or
3. Structural changes have occurred, or organs are destroyed or are in very precarious condition.

Prognosis: Very bad (especially in chronic diseases)
Follow up action: Medicine complementary to the first prescription should be prescribed in acute conditions.
A more similar medicine is to be found out and given in a chronic condition or if the patient is incurable and the subsequent medicine should be of palliative nature.

2.4. A full-time amelioration of the symptoms, yet no special relief of the patient.

Interpretation: There are latent conditions (existing organic conditions) in a few patients that prevent improvement beyond a certain limit. For e.g., a patient with one kidney or bigger part of the lungs having been calcified / fibrosis. Hence the patient is curable only to a certain limit. Suitable palliation has been brought about by the homoeopathic remedies.
Prognosis: Bad
Follow up action: Palliative medicine should be prescribed.

3. No Change / Status Quo

Interpretation: When no change is observable in the symptomatology in a patient, even after waiting for an adequate period of time and a careful re-evaluation reveals no error in the previously administered remedy, the inference may be drawn that the susceptibility of the patient was not such as to be favourably affected by either the number of doses administered or the potency selected.
Prognosis: Cannot be predicted definitely unless right remedy with proper dosage is administered
Follow up action: Intercurrent medicine may be prescribed.

4. Change of Symptoms

4.1. New symptoms appearing after the remedy.

Interpretation: The medicine was wrong. Greater number of such symptoms indicates towards selection of a dissimilar medicine.
Prognosis: Bad
Follow up action: If the symptoms are not of serious nature we should wait till the new symptoms pass off and the patient settles down to original state. After re-case taking a more similar medicine is to be given. If the symptoms are of serious nature and threatening it has to be antidoted.

4.2 Old symptoms are observed to reappear.

Interpretation: The medicine has been very right. Appearance of old symptoms indicates that the patient is curable.
Prognosis: Good.
Follow up action: The action of the medicine should not be disturbed. Only if the reestablished symptom/discharge/eruption stays for pretty long time, the medicine may be repeated. Here old symptom/diseases may come and go in the reverse order of their appearance (Following Hering's Law of Cure).

4.3 Symptoms take the wrong direction.

Interpretation: When the symptoms go from periphery to the centre, the remedy administered was a wrong one.
Prognosis: Very bad.
Follow up action: It has to be antidoted at once. A more similar remedy has to be found out and given.
In spite of best efforts in any disease condition, if a favorable response to the treatment is not achieved, it is advised to refer the case as per the guidelines given in STGs for individual disease.

Advantages of Homoeopathy

- Treatment with homoeopathic medicines is safe, effective and based upon natural substances. With the use of single simple substance in micro-doses, medicines are not associated with any toxicological effect and can be safely used for pregnant women and lactating mothers, infants and children and in the geriatric population.
- Medicines, instead of having a direct action on the micro-organisms, act on the human system (self-protective) to fight disease process. As such, no microbial resistance is known to develop against homoeopathic drugs.
- The mode of administration of medicines is easy. There are no invasive methods and medicines are highly palatable, thereby enhancing treatment compliance.
- Lack of diagnosis is not a hindrance for initiating treatment with homoeopathic medicines.
- Individualized approach for treatment which is the mainstay in homoeopathy is in consonance with increasing need for customized treatment, being realized in the modern era.
- Homoeopathic remedies are non-addictive and once relief occurs, the patient can easily stop taking them.
- Treatment is cost-effective.

CHAPTER 1

ACNE

ACNE

CASE DEFINITION

Acne is a disease of the pilosebaceous units in the skin of the face, neck, chest and upper back that causes non-inflammatory lesions - open (black) and closed (white) comedones, inflammatory lesions (papules, pustules, nodules and cysts), and varying degrees of scarring and pigmentary changes.[1,2]

INCIDENCE[2,3,4,5,6]

Acne is estimated to affect 9.4% of the global population; also, it is the eighth most prevalent disease worldwide. It is common in post-pubescent teens, with boys most frequently affected particularly with more severe forms of the disease. According to the Global Burden of Disease (GBD) study, acne vulgaris affects ~85% of young adults aged 12–25 years.

The exact incidence or prevalence of Acne in India is unclear due to insufficiency of published data. Yet, for India with a population of more than a billion plus people and a significantly greater number of young individuals, there are estimated 200–300 million acne sufferers.

Acne in a severe form is more common in males than in females, but the disease tends to be more persistent in females with high incidence in urban as compared to the rural population, with a few types leading to scar formation.

AETIOLOGY[7,8,9]

1. **Genetic factors:** Heredity plays an important role in the development of acne, with a family history of acne being present in 70 percent of cases.
2. **Endocrine factors**: Circulating androgens must be present if acne is to appear.
    - *Androgens:* Increases the size of sebaceous glands, increase sebum secretion
    - *Androgenic adrenocorticosteroids:* Have the same effect
    - *Oestrogens:* Have the opposite effect.

1 Sutaria AH, Masood S, Schlessinger J. Acne Vulgaris. [Updated 2019 Dec 13]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing;2020 [Cited on 2021 March 8]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459173/
2 Tan JKL, Bhate K. A global perspective on the epidemiology of acne. British Journal of Dermatology. Blackwell Publishing Ltd.2015; 172:3–12.
3 Thiboutot D, Gollnick H, Bettoli V, Dréno B, Kang S, Leyden JJ, et al. New insights into the management of acne: an update from the Global Alliance to Improve Outcomes in Acne group. J Am Acad Dermatol. 2005;60(5): S1-50.
4 Kabba R, Bajaj AK, Thappa DM, Sharma R, Vedamurthy M, Dhar S, et al. Acne in India guidelines for management. Indian J Dermatol Venereol Leprol.2009;75: S1-2.
5 Saxena K, Shah YM, Singh KK, Dutt S, Agrawal M, Singh N. Clinical profile of acne vulgaris in semiurban patients. Int J Res Dermatology.2018;4(1):23-28.
6 Ali FR, Al-Niaimi F. Acne vulgaris. Br J Hosp Med [Internet]. 2013;74(Sup5):C78–80 [Cited on 2021 March 8]. Available from: http://www.magonlinelibrary.com/doi/10.12968/hmed.2013.74.Sup5.C78
7 Engler D, Farinha AM. Acne. South Africa Pharm J.2016;83(10):27–34.
8 Yentzer BA, Hick J, Reese EL, Uhas A, Feldman SR, Balkrishnan R. Acne vulgaris in the united states: A descriptive epidemiology. Cutis.2010;86(2):94–99.
9 Kurokawa I, Danby FW, Ju Q, Wang X, Xiang LF, Xia L, et al. New developments in our understanding of acne pathogenesis and treatment. Exp Dermatol. 2009;18(10):821–32.

3. **Bacterial infection:** Propionibacterium acnes are present in pilosebaceous follicles and may play a major role in formation of acne pustules.
4. **Physical and chemical factors:** A variety of cosmetics, drugs, other chemicals, mechanical factors and certain types of irradiation may be acnegenic.
5. **Stress factors:** Although stress has not been shown to cause acne, it can aggravate the condition, possibly by inducing neurotic excoriation**.**
6. **Diet:** Dietary factors have little importance in acne but, occasionally, the intake of certain foods may appear to be associated with a mild flare of the condition.
7. **Fluid retention:** One of the major causes of acne is inadequate intake of fluids. When the body does not get enough water, it starts storing it, which leads to water retention. Excess water builds up in between the tissues and in the spaces between the cells.
8. **Weather and environment:** Ultraviolet light is beneficial, and acne tends to improve slightly in summer, although it can become much worse in hot, humid conditions found in the tropics.
9. **Racial factors:** These factors are of little importance although acne seems less common in Japanese people.
10. **Other factors:** Premenstrual aggravation, Polycystic ovary disease, Vitamin B supplementation, Obesity (has been found to be associated with an increased prevalence of acne in people between the ages of 20–40 years) etc.

PATHOGENESIS[10,11,12]

The pathogenesis involved in the formation of acne lesions is multifactorial involving hormonal, microbiological and immunological mechanisms and includes mainly four key pathogenic processes, viz.:

- altered follicular keratinization that leads to comedones
- increased and altered production of sebum secondary to hyperandrogenism, affecting the sebaceous gland size
- follicular colonization, ductal hyperkeratosis, abnormality or proliferation of the microbial flora especially Propionibacterium acnes; some studies have demonstrated that microbial agents trigger immune mediator's cytokine responses via Toll-like receptors (TLRs) that recognize pathogen-associated molecular patterns conserved among microorganisms and elicit immune responses
- complex inflammatory mechanisms that involve both innate and acquired immunity.

CLASSIFICATION OF ACNE

Acne vulgaris

Acne vulgaris: It is a chronic inflammatory disease of the pilosebaceous follicles, characterized by comedones, papules, pustules, nodules, and often scars. It is described according to the severity of the disease as follows:[13]

10 Burkhart CN, Gottwald L. Assessment of Etiologic Agents in Acne Pathogenesis. Skin Dermatology Clin.2007; 2(4):222–29.
11 Rosso JQ Del. A New Understanding of The Pathogenesis of Acne Vulgaris. J Drugs Dermatology.2013;12(8): S109 - S115
12 Kim J. Cunliffe Scientific Awards Review of the Innate Immune Response in Acne vulgaris: Activation of Toll-Like Receptor 2 in Acne Triggers Inflammatory Cytokine Responses. Dermatology.2005;211(3):193–98.
13 James WD. Acne. N Engl J Med. 2005; 352(14):1463-72.

Severity	Description
Mild	Comedones (noninflammatory lesions) are the main lesions. Papules and pustules may be present but are small and few in number (generally <10)
Moderate	Moderate numbers of papules and pustules (10–40) and comedones (10–40) are present. Mild disease of the trunk may also be present
Moderately severe	Numerous papules and pustules are present (40–100), usually with many comedones (40–100) and occasional larger, deeper nodular inflamed lesions (up to 5). Widespread affected areas usually involve the face, chest, and back
Severe	Nodulocystic acne and acne conglobata with many large, painful nodular or pustular lesions are present, along with many smaller papules, pustules, and comedones

Other less common types of acne:[14]

Acne conglobata: This is a mild form of cystic acne, characterized by numerous comedones and large abscesses with interconnecting sinuses, cysts and grouped inflammatory nodules. Suppuration is characteristic of acne conglobata.

Acne fulminans: Extremely severe cystic acne occurring in teenage boys. These undergo swift suppurative degeneration, leaving ragged ulcerations, mostly on the chest and back.

Tropical acne: This is severe acne occurring in the tropics during the seasons when the weather is hot and humid. Characteristically face is spared.

Acne aestivalis: Also known as Mallorca acne, this is also seasonal starting in spring, progressing during summer, and resolving completely in the fall.

Figure 1:Acne vulgaris: comedones. A: open comedones. B: closed comedones. C: submarine comedones. Courtesy: Neena Khanna Illustrated synopsis of dermatology and sexually transmitted diseases.

14 James WD, Berger TG, Elston DM. Andrews' diseases of the skin Clinical Dermatology. 10th ed. USA: Saunders Elsevier; 2006:231-250.

DIAGNOSIS

Acne vulgaris is primarily a clinical diagnosis. With the help of history and physical examination, one can determine if there is an underlying factor responsible for the development of acne, such as overuse of medication, chemicals or cosmetics and drugs which may be acnegenic. Endocrinological abnormality such as excessive circulating androgens as seen in cases of polycystic ovarian syndrome that leads to clinical features like seborrhea, hirsutism and androgenetic alopecia can also be one of the identifying factors for diagnosis of acne. Hormonal assay including FSH, LH and circulating levels of total and free serum testosterone, dihydroepiandrosterone should be tested in older women, especially those with new-onset acne and other signs of androgen excess.

Figure 2: Acne vulgaris polymorphic eruption of comedones, papules, pustules, nodules, and cysts. B: close up. Courtesy: Neena Khanna Illustrated synopsis of dermatology and sexually transmitted diseases.

EVALUATION AND ASSESSMENT

Different types or methods of classification of acne are known, viz; mild, moderate or severe depending on the lesions that predominate in a given patient[15] and also there is different classification for children.[16] The different grading system for evaluation and assessment are:

- Global Acne Grading System (GAGS)[17,18]
- Acne-specific quality of life questionnaire (Acne-QoL)[19]
- Global Acne Severity Scale (GEA Scale)[20]

15 Moradi Tuchayi S, Makrantonaki E, Ganceviciene R, Dessinioti C, Feldman SR, Zouboulis CC. Acne vulgaris. Nat Rev Dis Prim [Internet]. 2015; 1:15029. [Cited on 2021 March 8] Available from: http://www.ncbi.nlm.nih.gov/pubmed/27189872

16 Kim W, Mancini AJ. Acne in childhood: An update. Pediatr Ann. 2013;42(10):418–27.

17 Adityan B, Kumari R, Thappa DM. Scoring systems in acne vulgaris. Indian J Dermatol Venereol Leprol. 2009;75(3):323–26.

18 Sharma RK, Dogra S, Singh A, Kanwar A. Epidemiological patterns of acne vulgaris among adolescents in North India: A cross-sectional study and brief review of literature. Indian J Paediatr Dermatology. 2017;18(3):196-201.

19 Kamamoto CSL, Hassun KM, Bagatin E, Tomimori J. Acne-specific quality of life questionnaire (Acne-QoL): translation, cultural adaptation and validation into Brazilian-Portuguese language. An Bras Dermatol. 2014; 89(1): 83–90.

20 Dreno B, Poli F, Pawin H, et al. Development and evaluation of a Global Acne Severity Scale (GEA Scale) suitable for France and Europe. J Eur Acad Dermatol Venereol. 2011; 25:43–48.

DIFFERENTIAL DIAGNOSIS[21,22]

- **Beard folliculitis:** Pustules, papules or nodules which are present in perifollicular region, comedones are absent.
- **Acne keloidalis nuchae:** Most often seen in black patients; lesions are typically localised to the posterior neck, beginning as papules and pustules and may progress to confluent keloids.
- **Folliculitis(non-Gram-negative):** Common condition manifesting as follicular based erythematous papules and pustules.
- **Rosacea:** Presents with background erythema and telangiectasias (widened venules also referred to as spider veins), and inflammatory papules and pustules. No comedones are seen.
- **Demodicidosis:** It is caused by Demodex mites**.** Manifested by outbreaks of papular or papulopustular lesions of the face.
- **Keratosis pilaris:** Dry, rough patches and tiny bumps, comedones absent.
- **Seborrheic dermatitis:** Poorly defined scaly lesions, less induration and no comedones present.

COMPLICATIONS[3,23,24]

- Scarring can occur in acne because of picking or squeezing the lesions
- Long standing cases of acne can lead to anxiety and stress, which can ultimately lead to depression
- Lack of self-esteem
- Social withdrawal
- Calcinosis cutis.

TREATMENT

General management

In spite of easy availability of different treatment modalities, the modern medicine itself accepts their therapeutic shortcoming in successful treatment of acne, therefore, raising the need for efficient, convenient and economical mode of treatment wherein lies the role of homoeopathic medicines.

Homoeopathic management

In homoeopathic literature, large number of medicines have been given for different presentations of acne in different age groups. It has been evident from research conducted earlier that there is a significant decrease in acne lesions after administration of homoeopathic remedies with a positive

21 Engler D, Farinha AM. Acne. South Africa Pharm J. 2016;83(10):27–34.
22 Poli F, Differential diagnosis of facial acne on black skin. International Journal of Dermatology. 2012; 51(1):24-26.
23 Jović A, Marinović B, Kostović K, Čeović R, Basta-Juzbašić A, Bukvić Mokos Z. The Impact of Pyschological Stress on Acne. Acta Dermatovenerol Croat. 2017;25(2):1133–41.
24 Gallitano SM, Berson DS. How Acne Bumps Cause the Blues: The Influence of Acne Vulgaris on Self-Esteem. International Journal of Women's Dermatology. Elsevier Inc. 2018;4(1):12–17.

impact on the overall health of the patient.[25,26,27] Various observational studies have been done with different medicines of homoeopathy. In Synthesis Repertory there are 200 remedies mentioned in FACE chapter under the rubric Eruptions- acne.[28] The frequently verified characteristic features of some organospecific remedies are: ***Berberis aquifolium:*** Skin dry, rough, scaly with acne, pimples, blotches, clears the complexion, eruptions on the scalp extending to the face and neck. ***Eugenia jambos:*** Acne, simple and indurated. The pimples and some areas around are painful. Acne rosacea. Eruptions on face of young women, especially during scanty menses. ***Kali bromatum:*** Acne of the face; pustules. Bluish red pustular eruptions, on faces, chest, shoulders, leaves unsightly scars in young fleshy persons of gross habits. ***Bovista:*** Acne worse in summers, due to use of cosmetics. ***Ledum palustre:*** Red pimples on the forehead and cheeks, stinging pain when touched. ***Arsenicum bromatum:*** Acne in young people. Acne rosacea, with violet papules on nose, worse in the spring. ***Radium bromatum***: Small pimples. Erythema and dermatitis, with itching, burning, swelling and redness. ***Calcarea silicata***: Pimples, comedones; very sensitive itching, burning, cold and blue.

The list of frequently prescribed polychrest medicines with their indications are given below:[29,30,31]

Medicines	General indications	Characteristic particulars
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sits stooping; red orifices; burning sensation of skin; desires sweets, sugar, meat; when the best selected remedy fails to improve*	• Acne punctata • Pimply eruptions, with a red areola and very itching sensation, esp. on face • Comedones; black pores of skin, particularly on face • Worse from washing, bathing, changeable weather • Better in dry, warm weather
Sepia	*Chilly patient; tall, thin built with yellow saddle across upper part of cheeks and nose, big belly; dry flabby skin. Predisposed to take cold at change of weather. Desire for sour food which aggravates. Irregular menses . Cheerful, active when well but indifferent and quarrelsome when sick self-absorbed, sad, weeping and indolent*	• Pimples on forehead near hair, pimples on chin. Acne < before menses. Dark circles under eyes. Chloasma • Moist pimply eruptions at margin of vermilion, border of upper lip, on various parts of the body; better by scratching, after which there is a pinkish color • Worse from dampness, left side, after sweat, cold air, before a thunderstorm • Better from warmth of bed, hot applications

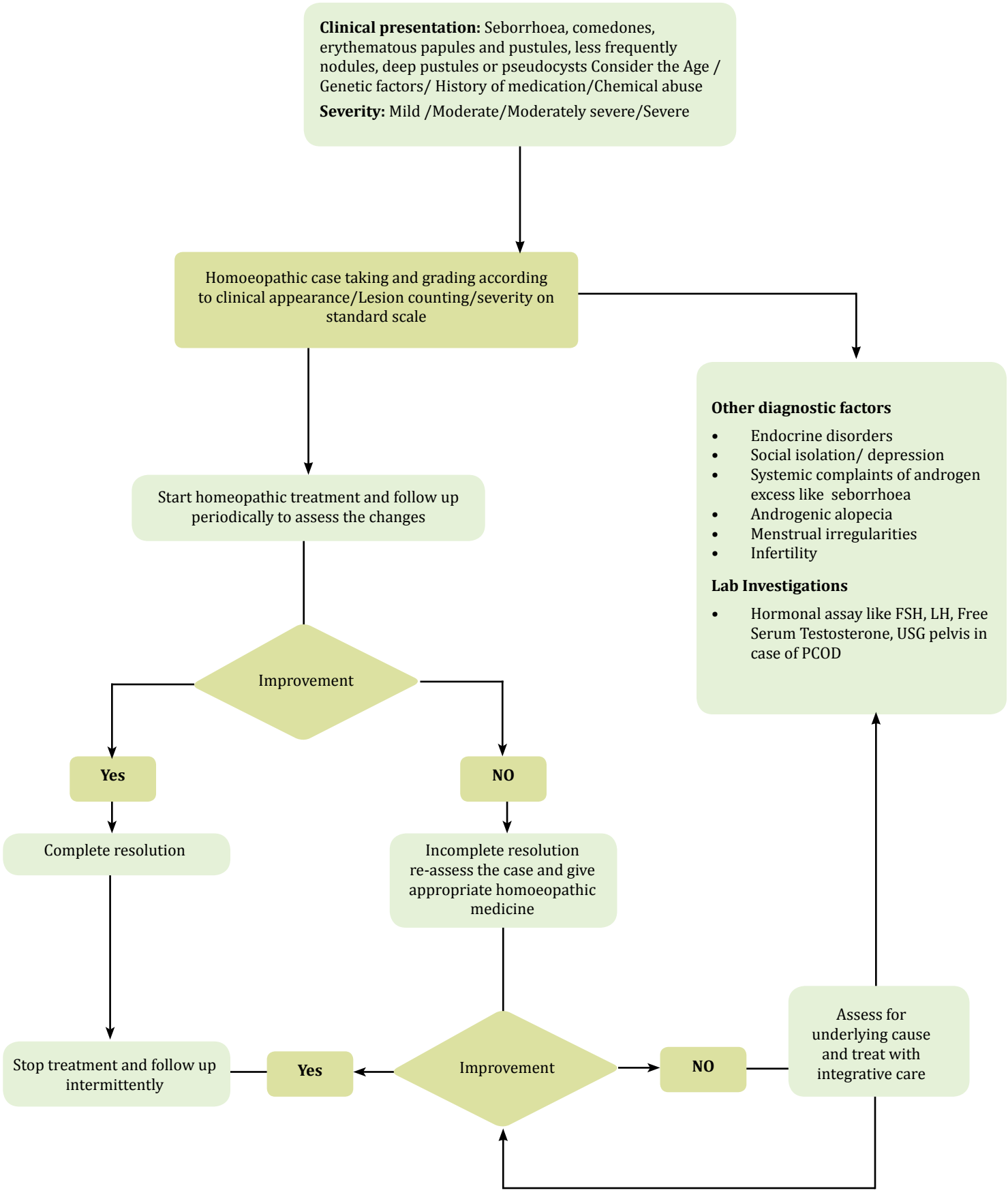
25 Miglani A, Manchanda RK. Azadirachta indica in treatment of acne vulgaris-an open-label observational study. Indian J Res Homoeopath. 2018;8(4):218-223.
26 Miglani A, Manchanda RK. Prospective, non-randomised, open-label study of homeopathic Zingiber officinale (ginger) in the treatment of acne vulgaris. Focus Altern Complement Ther. 2014; 19:191–7.
27 Miglani A, Manchanda RK. Observational study of Arctium lappa in the treatment of acne vulgaris. Homoeopathy. 2015;103(3):203–7.
28 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002.
29 Murphy R. Homeopathic medical repertory. 2nd revised ed. New Delhi: B. Jain Publishers;2009.
30 Boericke W. Boericke's New Manual of Homoeopathic Materia Medica with Repertory: Third Revised and Augmented Edition based on Ninth Edition. New Delhi: B. Jain Publishers; 2010.
31 Allen HC. Allen's Keynotes- Rearranged and classified with leading remedies of the Materia Medica and bowel nosodes. 10th Reprint edition. New Delhi: B. Jain Publishers (P) Ltd;2006.

Medicines	General indications	Characteristic particulars
Pulsatilla	*Hot patient; marked changeability of symptoms; aversion to fatty foods, warm foods and drinks, dislikes butter; thirstless with great dryness of mouth; tongue coated yellow or whitish; desire for company, mild, gentle, affectionate, yielding, weeping disposition; worse towards evening and in warm room; better in open air, by slow, gentle motion and cold application*	• Acne at puberty • Pimples: from scalp to middle of back, on side of neck; neck below chin, legs • Worse from very rich, fat, indigestible food, warm applications, heat • Better in cold air or cool room,
Arsenicum album	*Chilly patient; rapid disproportionate prostration; burning pains better by heat (except headache); cadaveric odour of discharges and body; anxiety, anguish, fear of death and restlessness. Great thirst for cold water drinks often but little at a time*	• Small red, pointed pimples with violent burning pains, on scalp, and forehead with itching, going off after scratching • Pimples over the whole scalp, painful when rubbed or touched. Pimples small, difficult to cure • Worse from cold, cold drinks or food • Better by heat
Antimonium crudum	*Chilly patient. Excessive irritability and fretfulness with thickly coated white tongue. For children and old people with tendency to grow fat. Desire for acids, pickles. Aggravated by heat and cold bathing. Sentimental mood*	• Pimples, vesicles, and pustules. Pustules form upon the skin with red areola • Pustular eruptions have an inflamed base that is red, and sensitive • Worse from acids or sour wine, after heat of sun or fire, extremes of cold or heat • Better in the open air, after a warm bath
Calarea phosphoricum	*Chilly patient. Anaemic and dark complexion, thin spare subjects instead of fat. Indicated in tardy dentition, bone diseases, non-union of fractured bones and anemia. Craving for bacon, ham, salted or smoked meats.*	• At puberty; acne in anaemic girls with vertex headache and flatulent dyspepsia, > by eating • Acne pustulosa • Pimples in region of joints • Worse from exposure to damp, cold, changeable weather, melting snow • Better in summer, warm, dry atmosphere
Graphites	*Chilly patient takes cold easily; fatty; pale; tendency to skin affections and constipation; lumpy, thick, hard skin and glands; dislikes sweets; cautious, indecisive and lazy; history of delayed menstruation*	• Eruptions oozing, discharging a watery, glutinous fluid, thin and sticky • Moist eruptions in groins • Unhealthy skin, every little injury suppurates. Itching pimples • Worse at night, during and after menstruation • Better from wrapping up

Medicines	General indications	Characteristic particulars
Mercurius solubilis	*Sensitive to changes of temperature. Profuse offensive perspiration. Tongue flabby with imprint of teeth. Increased salivation, increased thirst for large quantity of water. Worse at night, in wet damp weather*	• Pimples around the main eruption; Itching • Worse from warmth of bed, in autumn, warm days and cold, from perspiration
Natrum muriaticum	*Hot patient; poorly nourished, great emaciation (marked on neck); losing flesh while living well; craving for salt; aversion to bread and fatty things; constipated; increased thirst; mapped tongue with red insular patches; melancholic, sad, plays alone, irritable, cross, cries when spoken to; awkward, hasty, drops things from nervous weakness; disposition to weep without cause, consolation aggravates*	• Acne puncata, comedones; vesicles with watery contents, burst and leave a thin scurf • Face oily, shiny, as if greased • Worse at the seashore or form sea air, heat of sun or stove • Better in the open air, cold bathing
Psorinum	*Extremely chilly patient, wants to cover even in hottest summer weather; pale, delicate, sickly; scanty perspiration; offensive discharges; wakes up at night feeling hungry; anxious, fearful; child is good all day while restless and troublesome at night*	• Acne of all forms, simplex, rosacea worse during menses, from coffee, fat, sugar, meat, when best selected remedy fails or only palliates • Worse from coffee, changes of weather, in hot sunshine, from cold • Better from heat, warm clothing, even in summer
Silicea terra	*Extremely chilly patient. All symptoms worse by cold except stomach complaints, which are ameliorated. Profuse, offensive discharges; sweats profusely especially on feet. Easy suppuration; glandular affinity; children with large heads and distended abdomen; weak ankles, slow in learning to walk; constipation; obstinate, head strong, cries when spoken kindly to, nervous, apprehensive. Oversensitive, irritable and fearful*	• Acne: eruptions; itches and burns only during day; acne solaris and acne rosacea; pus offensive • Worse from cold, during menses • Better from warmth

Medicines	General indications	Characteristic particulars
Thuja occidentalis	*Chilly patient; with illusions and fixed ideas. Unhealthy skin with tendency for warty growths; oily/ greasy sweat, face and stool; perspiration on uncovered parts. Complaints worse from cold, warm air and damp humid atmosphere; chronic complaints better in cold*	• Purulent pimples containing fluid, like varnish; biting pain itching on skin, better by scratching • Skin looks dirty and brown • Worse at night, from heat of bed, from cold damp air, fat, coffee, vaccination
Tuberculinum	*Takes cold easily; tall, lean, thin, narrow- chested; active and precocious mentally but weak physically; emaciated with good appetite; family/ personal history of tuberculosis; changeability of symptoms. Obstinate and disobedient children; irritable, fretful, desire to use foul language; discontented, fear of dogs*	• Acne in tuberculous children • Worse before a storm, dampness, early morning • Better in open air

ALGORITHM OF MANAGEMENT OF ACNE


Clinical presentation: Seborrhoea, comedones, erythematous papules and pustules, less frequently nodules, deep pustules or pseudocysts Consider the Age / Genetic factors/ History of medication/Chemical abuse
Severity: Mild /Moderate/Moderately severe/Severe
Homoeopathic case taking and grading according to clinical appearance/Lesion counting/severity on standard scale
Other diagnostic factors
Endocrine disorders
Social isolation/ depression
Systemic complaints of androgen excess like seborrhoea
Androgenic alopecia
Menstrual irregularities
Infertility
Lab Investigations
Hormonal assay like FSH, LH, Free Serum Testosterone, USG pelvis in case of PCOD
Start homeopathic treatment and follow up periodically to assess the changes
Improvement
Yes
NO
Complete resolution
Incomplete resolution re-assess the case and give appropriate homoeopathic medicine
Stop treatment and follow up intermittently
Yes
Improvement
NO
Assess for underlying cause and treat with integrative care

CHAPTER 2

ADHESIVE CAPSULITIS (FROZEN SHOULDER)

ADHESIVE CAPSULITIS (FROZEN SHOULDER)

CASE DEFINITION

Adhesive capsulitis is characterized by pain and restricted movement of the shoulder, also referred to as "frozen shoulder".[1] It is characterised by significant restriction of both active and passive shoulder motion that occurs in the absence of a known intrinsic shoulder disorder.[2] The condition was initially termed 'frozen shoulder' by Codman in 1934 and later described as 'adhesive capsulitis' by Neviaser in 1945.[3]

INCIDENCE/ PREVALENCE[4,5,6]

- Primary adhesive capsulitis is reported to affect 2% to 5.3% of the general population.
- The prevalence of secondary adhesive capsulitis related to diabetes mellitus and thyroid disease is reported to be between 4.3% and 38%.
- The disease is bilateral in about quarter of the patients and its peak incidence is seen in between the age group of 40-60 years and is more common in manual workers and women.

ETIOLOGY AND RISK FACTORS[1,6,7,8]

Although the etiology of adhesive capsulitis has not been identified, there are a number of associated factors:

- Having adhesive capsulitis on one side places an individual at risk (5%-34%) for opposite-arm involvement, and can occur bilaterally simultaneously up to 14% of the time
- Individuals with type 1 or 2 diabetes mellitus
- Patients with Dupuytren's disease
- Thyroid disease
- Lower body weight or lower Body Mass Index (BMI)
- Further associations include cardiac diseases, pulmonary diseases, parkinson's disease and stroke, hyperthyroidism, hypothyroidism, scleroderma or previous non-shoulder surgery including cardiac surgery, thoracic, neck surgery or neurosurgery or shoulder trauma as rotator cuff injury

1 Langford CA, Gilliland BC. Periarticular disorders of the extremities. In: Fauci AS, Braunwald E, Kasper D, Hauser S, Longo DL, Jameson JL, et al, editors. Harrison's Principles of Internal Medicine.17th ed. New York: Mc Graw Hill Education;2008: 2184-2186.
2 Chan HBY, Pua PY, How CH. Physical therapy in the management of frozen shoulder. Singapore Med J.2017;58(12):685-89.
3 Trachsel JM. Adhesive Capsulitis: A Case Study. Orthopaedic Nursing. 2009;28(6):279-83.
4 Uppal HS, Evans JP, Smith C. Frozen shoulder: A systematic review of therapeutic options. World J Orthop.2015;6(2):263-68.
5 Yuan X, Zhang Z, Li J. Pathophysiology of adhesive capsulitis of shoulder and the physiological effects of hyaluronan. European Journal of Inflammation. 2017;15(3):239-43.
6 Kelley MJ, Shaffer MA, Kuhn JE, Michener LA, Seitz AL, Uhl TA, et al. Shoulder Pain and Mobility Deficits: Adhesive Capsulitis. Clinical Practice Guidelines Linked to the International Classification of Functioning, Disability, and Health from the Orthopaedic Section of the American Physical Therapy Association. Journal of Orthopaedic & Sports Physical Therapy.2013;43(5): A1-A31.
7 Wang K, Ho V, Hunter-Smith DJ, Beh PS, Smith KM, Weber AB. Risk factors in idiopathic adhesive capsulitis: a case control study. J Shoulder Elbow Surg. 2013;22(7): 24–9.
8 Malavolta EA, Gracitelli MEC, Pinto GMR, da Silveira AZF, Assunc¸ão JH, Neto AAF. Asian ethnicity: a risk factor for adhesive capsulitis. Revista Brasileira de Ortopedia .2018; 53(5):602–06.

- Adhesive capsulitis may follow bursitis or tendinitis of the shoulder
- Prolonged immobility of the arm
- Autoimmune disease and treatment of breast cancer

CLASSIFICATION[5,8]

The ICD-10 code associated with adhesive capsulitis is M75.0. Zuckerman proposed to classify frozen shoulder into primary and secondary and sub-divided secondary frozen shoulder into intrinsic, extrinsic and systemic ones.

1) **Primary/ idiopathic frozen shoulder:** An underlying etiology or associated condition cannot be identified.
2) **Secondary frozen shoulder:** An underlying etiology or associated condition can be identified:
    - *Intrinsic:* In association with rotator cuff disorders (tendinitis and partial-thickness or full thickness tears), biceps tendinitis, or calcific tendinitis.
    - *Extrinsic:* In association with previous ipsilateral breast surgery, cervical radiculopathy, chest wall tumor, previous cerebrovascular accident, or more local extrinsic problems, including previous humeral shaft fracture, scapulothoracic abnormalities, acromioclavicular arthritis, or clavicle fracture.
    - *Systemic:* Diabetes mellitus, hyperthyroidism, hypothyroidism, hypoadrenalism.

PATHOGENESIS[1,6,7,8]

- The pathophysiology of adhesive capsulitis of shoulder is not clear. It starts without a specific precipitating event, as an inflammatory reaction in the shoulder capsule. The presence of cytokines is evidence of a possible autoimmune process, which however has no established relations or etiology.
- Elevated serum cytokine levels result in a sustained intense and protracted inflammatory/ fibrotic response affecting the synovial lining and capsule-ligamentous complex.
- Pathologically, the capsule of the shoulder is thickened, and a mild chronic inflammatory infiltrate and fibrosis may be present.
- Adhesive capsulitis involves both inflammation and thickening and scarring of the connective tissue. Cyclooxygenases (COXs) contribute to inflammation and the breakdown of the structure of peripheral tissues.
- The microscopic examination of tissue reveals fibroblasts mixed with type I and type III collagen, which leads to adhesive capsulitis generally being regarded as a fibrotic disorder.

DIAGNOSIS

Clinical presentation

- The primary purpose for diagnosis/ classification of shoulder pain is to direct intervention and form prognosis.[8] Idiopathic frozen shoulder is characterised by spontaneous, often severe pain of sudden onset, and may follow minor trauma.[9]

9 Williams NS, Bulstrode CJK, O'Connell PR. Bailey & Love's Short Practice of Surgery. 25th ed. London: Taylor and Francis Ltd; 2008.

- Night pain is often present in the affected shoulder and pain may interfere with sleep.
- The shoulder is tender to palpation, and both active and passive movements are restricted[1] (elevation <100°, external rotation >50% restriction).[6]
- Local tenderness is often felt anteriorly over the rotator interval.
- The pathognomonic sign of frozen shoulder is loss of external rotation, and this differentiates it from rotator cuff disease.[11]

Clinical course

The clinical course of frozen shoulder can be divided into three stages as follows:[2,10,11]

1) *Stage 1 – Painful phase:* This can last for 2–9 months. The shoulder becomes increasingly painful, especially at night, and the patient uses the arm less and less. The pain is often very severe and may be unrelieved by analgesics. This phase is characterized by an acute synovitis of the glenohumeral joint.
2) *Stage 2 – Stiffening phase:* This can last for 4–12 months and is associated with a gradual reduction in the range of movement of the shoulder. The pain usually resolves during this period, although there is commonly still an ache, especially at extremes of the reduced range of movement.
3) *Stage 3 – Thawing phase:* This lasts for a further 4–12 months and is associated with a gradual improvement in the range of motion.

   The clinical course runs over a period of 1–3 years, and the condition usually resolves without any long-term sequelae.[11] In some cases, it may persist and present symptoms like mild pain which is the most common complaint[2] or with some limitation of shoulder motion.[1]

COMPLICATIONS[11]

- Residual pain
- Residual stiffness
- Fracture of the humerus
- Rupture of the biceps tendon after shoulder manipulation

INVESTIGATIONS

Diagnosing adhesive capsulitis is primarily determined by history and physical examination, but imaging studies can be used to rule out underlying pathology.

a) Radiographs are typically normal with adhesive capsulitis but can identify osseous abnormalities, such as glenohumeral osteoarthritis.[8] Radiographs of the shoulder show osteopenia.[1]Arthrographic findings associated with adhesive capsulitis include a joint capsule capacity of less than 10 to 12 mL and variable filling of the axillary and subscapular recess.[8]A decrease of joint volume indicates shortening of the joint capsule.[5]

10 Jason JI, Sundaram SG, Subramani MV. Physiotherapy Interventions for Adhesive Capsulitis of Shoulder: A Systematic Review. Int J Physiother Res. 2015;3(6):1318-25.

11 Mezian K, Coffey R, Chang KV. Frozen Shoulder. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021[cited 2021 March 2]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK482162/

b) Magnetic resonance imaging (MRI) identifies abnormalities of the capsule and rotator cuff interval in patients with adhesive capsulitis.[8] MRI can depict thickening of the joint capsule particularly in the axillary region and demonstrates thickening of the coracohumeral ligament.

c) Magnetic resonance arthrography (MRI) may show obliteration of the subcoracoid fat triangle, resulting from shortening or fibrosis of the rotator interval capsule. Alteration of the synovium can be shown by dynamic MRI enhanced with intravenous gadolinium administration.[5]

EVALUATION AND ASSESSMENT

In the orthopaedic and rheumatologic community, there has been an increased interest in outcome measures that capture the patient's own perspective of their clinical status.[12] There are several outcome measures designed to assess patients with shoulder disorders:

- Constant shoulder score [13]
- American Shoulder and Elbow Surgeons shoulder score (ASES)[14]
- Disabilities of the Arm Shoulder and Hand (DASH) score [15]
- QuickDASH[16]
- Shoulder Pain and Disability Index (SPADI)[17]

The inclusion of at least one generic and one specific questionnaire has been recommended since they complement each other.[13] Most commonly used generic and multidimensional measures are Medical Outcome Study Short Form- 36 (SF-36)[18] and Euro Quality of Life (5D-5L)[19]. These tools are an important (and often the only) way to obtain quantitative, meaningful assessments of the effect of treatment on the quality of life and level of function experienced by patients.[20]

RED FLAGS[21]

- Trauma, weakness (acute cuff tear)
- Any mass or swelling (tumor)
- Red skin fever, systemically unwell (infection)

12 Fernandes MR, Barbosa MA, Faria RM. Quality of life and functional capacity of patients with adhesive capsulitis: identifying risk factors associated to better outcomes after treatment with nerve blocking. Rev Bras Reumatol. 2015;57(5):445–51.

13 Orthopaedic score [Internet]. London: Constant Shoulder Score [cited 2019 August 05]. Available from: http://www.orthopaedicscore.com/scorepages/constant_shoulder_score.html

14 Michener LA, McClure PW, Sennett BJ. American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Form, patient self-report section: reliability, validity, and responsiveness. J Shoulder Elbow Surg. 2002;11(6):587-94.

15 The DASH Outcome Measure [Internet]. Toronto: The Disabilities of the Arm, Shoulder and Hand (DASH) Outcome Measure 2010 [Cited 2019 August 05]. Available from: http://www.dash.iwh.on.ca/sites/dash/files/downloads/DASH_questionnaire_2010.pdf

16 The DASH Outcome Measure Internet. Toronto. The Disabilities of the Arm, Shoulder and Hand (DASH) Outcome Measure 2010 [Cited 2019 August 05]. Available from: http://www.dash.iwh.on.ca/sites/dash/files/downloads/quickdash_questionnaire_2010.pdf

17 Roach KE, Budiman-Mak E, Songsiridej N, Lertratanakul Y. Development of a shoulder pain and disability index. Arthritis Care Res.1991;4(4):143-49.

18 Research and Development (RAND) Internet. California: Medical Outcomes Study (MOS)The 36-Item Short Form Health Survey (SF-36) [Cited 2019 August 05].Available from: https://www.rand.org/content/dam/rand/www/external/health/surveys_tools/mos/mos_core_36item_survey.pdf

19 EuroQOL Group [Internet]. Rotterdam: EQ-5D-5L 2009 [Cited 2019 August 05]. Available from: https://euroqol.org/eq-5d-instruments/eq-5d-5l-about/

20 Plummer OR, Abboud JA, Bell JE, Murthi AM, Romeo AA, Singh P et al. A concise shoulder outcome measure: application of computerized adaptive testing to the American Shoulder and Elbow Surgeons Shoulder Assessment. J Shoulder Elbow Surg.2019; 28:1273–80.

21 Rangan A, Goodchild L, Gibson J, Brownson P, Thomas M, et al. Frozen shoulder. Shoulder elbow; 2015:7(4):299-307.

DIFFERENTIAL DIAGNOSIS[3,8]

The following conditions should be considered in the differential diagnosis when a patient presents with shoulder pain:

- Shoulder dislocation
- Osteoarthritis
- Impingement syndrome and rotator cuff tear
- Tumor
- Acute calcific tendonitis/ bursitis

MANAGEMENT

General management

The main objective of all treatments for adhesive capsulitis should be early pain relief and functional restoration.[6] While selecting a treatment method for adhesive capsulitis, it is extremely important to consider the patient's symptoms, stage of the condition, and recognition of different patterns of motion loss.[12]

Patient education: Patients should be educated in the chronicity of this condition. If they know and understand ahead of time that it can be several years before symptoms are completely resolved, apprehension and a feeling of urgency for functional return may be decreased.[22]

Physiotherapy: There is a fair level of evidence for manual mobilisation techniques with exercise for adhesive capsulitis.[12] Passive mobilisation and capsular stretching are two of the most used techniques. There are several adjuncts that are often used with physiotherapy including extracorporeal shockwave therapy, electromagnetic stimulation, acupuncture and the use of lasers.

Homoeopathic management

The Homoeopathic Medical Repertory by Robin Murphy[23] lists the following medicines under rubric 'frozen shoulder': *ferr., rhus-t., ruta, sang., thiosin*. This repertory has 159 medicines under the rubric 'Pain, shoulders' and 30 medicines under the rubric 'Stiffness, shoulders. The number of medicines in the Synthesis Repertory[24] under the rubric 'Pain, shoulders' is 344 and under the rubric 'Stiffness, shoulders' is 59. There are a few studies showing encouraging results with homoeopathic treatment.[25,26]

22 Manske RC, Prohaska D. Diagnosis and management of adhesive capsulitis. Curr Rev Musculoskelet Med.2008; 1:180–89.
23 Murphy R. Homoeopathic Medical Repertory. Second Indian Edition (Reprint). New Delhi: Indian Books & Periodicals Publishers;2004:409-1635.
24 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers (Pvt. Ltd); 2002.
25 Magotra N, Sharma N, Michael J, Kundu N, Nath A, et al. Utility of homoeopathic medicines in treatment of frozen shoulder: An open, observational clinical trial. National homoeo recorder.2018;4(14): 36.
26 Shwetha B. A Clinical study of adhesive capsulitis and its homeopathic treatment [dissertation on the internet]. Karnataka: Rajiv Gandhi University of Health Sciences; 2010[Cited 2021 March 9]. Available from: http://52.172.27.147:8080/jspui/bitstream/123456789/4607/1/Shwetha%20B.pdf

The organospecific remedies verified clinically and suggestive for adhesive capsulitis of shoulder are:[27,28]***Ammonium phosphoricum****:* Pain in shoulder joint. Acts well in patients with gout, uric acid diathesis. Nodosities in finger joints. ***Asparagus officinalis*****:** Rheumatic pain in back, especially near shoulder and limbs. Pain at acromion process of left scapula under clavicle and down arm, with feeble pulse. ***Chelidonium majus:*** Pain in arms, shoulders, hands, fingertips. Right side shoulder and scapula affected with liver complaints. ***Elaps corallinus****:* Pressure between the shoulders. Pain worse in wet weather, fears rain. ***Fagopyrum esculentum*****:** Pain in shoulder, with pain along fingers. Vehement itching in arms and legs, better by cold bathing. ***Ferrum muriaticum:*** Pain in right shoulder, right elbow, and a marked tendency to cramps and round red spots on the cheeks. ***Granatum*****:** Pain around shoulders, as if heavy load had been carried. ***Guaiacum officinale*****:** Rheumatic pain in shoulders, arms and hand. Tearing and shooting in the shoulder-blades, and in the forearms. Sharp stitches in the top of right shoulder. With stiffness worse by heat. ***Indium metallicum*****:** Constant pain in left shoulder, as if bruised. Intermitting pains in left shoulder with soreness extending down arm. Muscles of left arm and shoulder feel flabby and soft; no power in arm. ***Ledum palustre:*** Throbbing in the right shoulder. Pressure in the shoulder, worse motion, night; better cold application. ***Myrica cerifera*****:** Pain under shoulder-blades and back of neck, in all muscles, in hollow of right foot. ***Natrium arsenicosum*****:** Aching in arms; worse in shoulder. Joints stiff. With nasal catarrh and pain at the root of nose. ***Primula veris*****:** Right axillary muscles painful. Weight and lassitude in limbs, especially shoulders. ***Radium bromatum:*** Sharp pains in shoulders, arms, hands and fingers. Arms feel heavy. Cracking in shoulder; accompanied with skin complaints. Worse at night. Better open air, continued motion, hot bath. ***Ranunculus bulbosus:*** Right side shoulder affected. Muscular pains about margins of shoulder blades in women of sedentary employment, often burning pain in small spots, worse wet stormy weather, evening, cold air.

The commonly prescribed medicines along with their indications are given in the following table:[25,26,29]

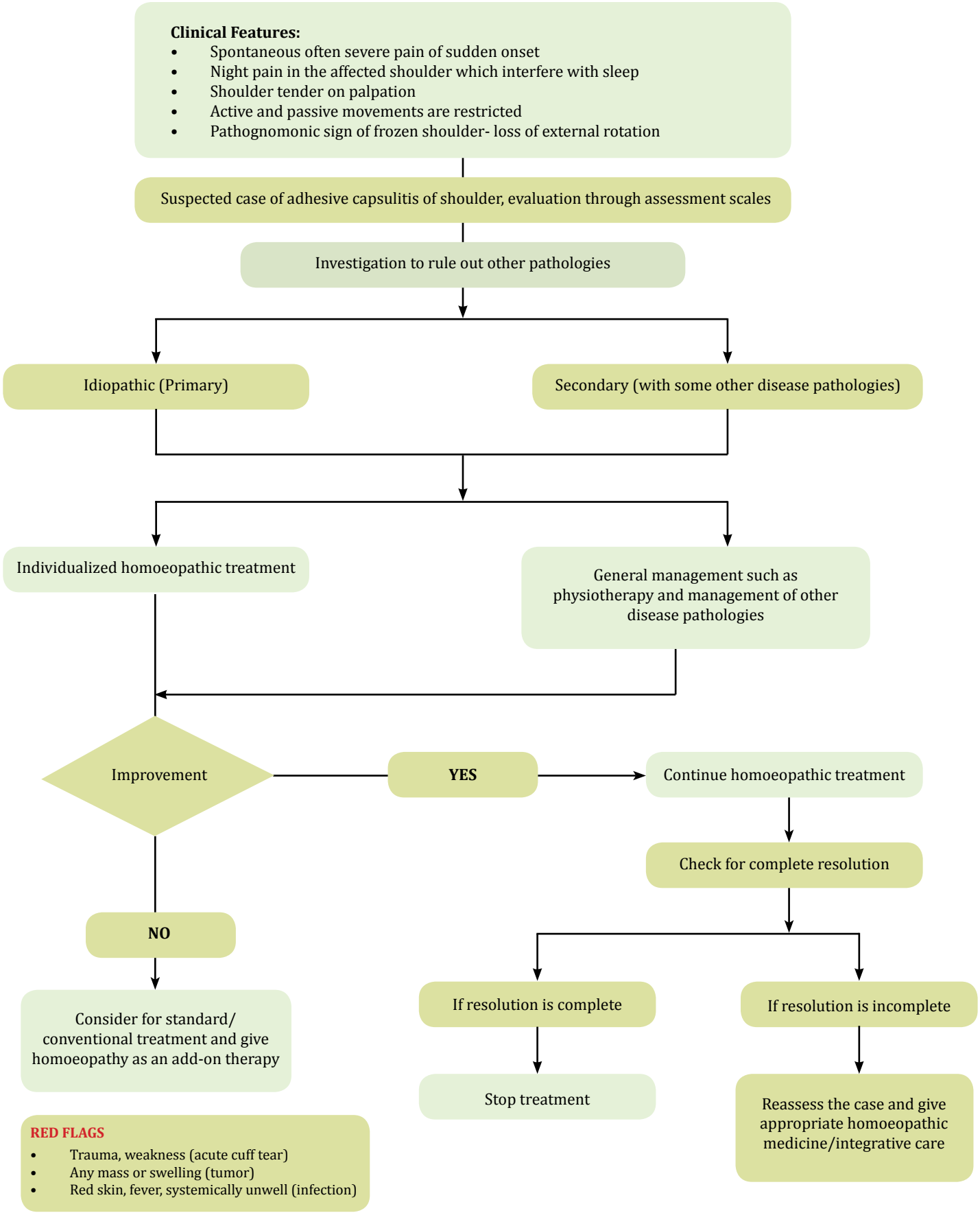
27 Boericke W. New Manual of Homoeopathic Materia Medica with Repertory.9th ed. New Delhi: B Jain Publishers Pvt Limited;2010.
28 Clarke JH. A Dictionary of Practical Materia Medica. Reprint edition. New Delhi: B Jain Publishers Pvt Limited; 2009.
29 Allen HC. Keynotes and Characteristics with Comparisons of some of the Leading Remedies of the Materia Medica with Bowel Nosodes.8th ed. New Delhi: B Jain Publishers Pvt Limited;2013.

Medicines	General indications	Characteristic particulars
Calcarea carbonica	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets; aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated*	• Rheumatoid pains after exposure to water. Sharp sticking pains as if parts were wrenched or sprained • Arthritic nodosities • Worse in cold air, wet weather, cold water, from washing, morning • Better in dry weather, lying on painful side
Ferrum metallicum	*Chilly patient. Anemic and chlorotic, with pseudo-plethora; who flush easily. Oversensitiveness. Vomiting after eating, after midnight. Intolerance to eggs*	• Rheumatism of the shoulder. Cracking in shoulder joint, left shoulder • Shooting and tearing pain shoulder joint, and in the arm, or pulling, paralytic weakness and heaviness • Worse at night, at rest, especially while sitting still • Better on walking slowly about, in summer
Kalium carbonicum	*Chilly patient. Kali pains are sharp and cutting; nearly all are better by motion. Sweating, backache and weakness are accompanying symptoms in most of diseases. Obstinate; hypersensitive to pain, noise and touch. Swelling over upper eyelid*	• Tearing pain in arms from shoulder to wrist, swelling of shoulder, with pain • Cracking in shoulder joint when moving or raising arm • Pain, as from blows and bruises, under right shoulder joint • Worse in cold weather, lying on left and painful side • Better in warm weather, during day
Lycopodium clavatum	*Hot patient; intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastrointestinal affections; tendency for flatulent dyspepsia; worse from 4pm - 8pm; right-sided complaints or symptoms shift from right to left; desire for warm foods and drinks, sweet; dominating, cranky, lack of self-confidence, precocious*	• Heaviness of arms. Numbness and tearing pain in shoulder and elbow joints especially while at rest or at night • Rheumatic tension in right shoulder joint. Cannot lie on painful side. • Better by motion, after midnight, from being uncovered
Medorrhinum	*Hot patient. Chronic ailments due to suppressed gonorrhea. Time passes too slowly. Difficult concentration. Craving for liquor, salt, sweets, warm drinks. Chronic rheumatism. State of collapse and trembling all over. Ailments from daylight to sunset, heat, inland*	• Rheumatism of top of shoulder and arm; pains extend to fingers • Worse when thinking of it, heat, covering, stretching, thunderstorm, least movement, from daylight to sunset • Better at the seashore, damp weather

Medicines	General indications	Characteristic particulars
Nux vomica	*Chilly patient; thin; prone to indigestion; tongue coated yellowish in the posterior part; constipation; with frequent unsuccessful desire for stool. Oversensitive to all external impressions; noise, odors, light or music; nervous disposition*	• Rheumatic pains, with sensation of weakness in shoulders and arms, soreness in shoulder joint • Drawing pain in arms, extending from the shoulder to fingers, with sensation as if the arms were asleep • Loss of motion of the arm, esp. at night • Worse in morning, from touch, dry weather, in cold air • Better in evening, while at rest, lying down, in damp, wet weather, hard pressure
Phosphorus	*Tall, fast growing child with tendency to stoop; haemorrhagic tendency. Chilly patient; craving for salt, cold foods and drinks. Oversensitive to external impressions; nervous and affectionate, anxious esp. during thunderstorm*	• Rheumatic, tearing and lancinating pains in shoulders, arms, and hands (particularly in joints) • Stitches in elbow and shoulder joints, stiffness in morning on washing, with pressure • Worse in evening, before midnight, lying on left or painful side, change of weather, from getting wet in hot weather • Better by lying on right side, from being rubbed
Rhus toxicodendron	*Chilly patient; body sore, bruised and stiff; restless, can't rest in any position; red triangular tip of tongue; worse in damp, cold, rainy weather, during rest and sleep, better by continued motion; increased thirst; great apprehension at night, sad, anxious; weeping without knowing why*	• Tearing and burning sensation in shoulder, with paralysis of arm, pain between shoulders on swallowing • Worse before a storm, at night, from getting wet while perspiring • Better in warm, dry weather, wrapping up, change of position, moving affected parts
Ruta graveolens	*All parts of the body are painful as if bruised. Feeling of intense lassitude, weakness and despair. Constipation from inactivity or impaction. Over-straining of ocular muscles. Eye strain followed by headache*	• Wrenching pain in the shoulder joint, especially when arms are hanging down or when resting on them • Dull tearing pain in bones of arms and elbow joints • Worse on lying down, from cold, wet weather
Sanguinaria canadensis	*Right-sided complaints. Increased thirst, aversion to butter and fat food. Desires highly seasoned food. Grumbling child, indolent, disinclined to mental effort; worse from sweets, heat of sun*	• Rheumatism of right shoulder, right deltoid, worse at night in bed; cannot raise arm • Worse on right side, motion, touch • Better from sleep, darkness

Medicines	General indications	Characteristic particulars
Staphysagria	*Sickly, tired, sensitive subjects; bottled up emotions; always angry. Easily offended, apathetic, indifferent. Nervous affections with marked irritability. Diseases of genito-urinary tract and skin. Worse from anger, indignation, grief, mortification, loss of fluids, onanism, sexual excesses, tobacco; least touch on affected parts. Better after breakfast, warmth, rest at night*	• Aching of shoulders; stitches in shoulder joints • Dislocation of right shoulder joint with pain only on moving
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sits stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve*	• Rheumatic pain in left shoulder; drawing and tearing pain in arms and hands • Stitching pain extending from shoulder into chest on motion • Pressure on shoulders as from a weight • Worse at rest, when standing, warmth in bed, changeable weather • Better in dry, warm weather, lying on the right side
Syphilinum	*Utter prostration and debility in morning. Pains from darkness to daylight; decrease and increase gradually. Syphilitic affections. Loss of memory, apathetic, hopelessness of recovery, confusion*	• Rheumatism of shoulder joint or at the insertion of deltoid • Worse by raising arm laterally at night, sundown to sunrise, seashore, in summer • Better during day, moving about slowly

ALGORITHM OF TREATMENT PROCESS FOR ADHESIVE CAPSULITIS


Clinical Features:
Spontaneous often severe pain of sudden onset
Night pain in the affected shoulder which interfere with sleep
Shoulder tender on palpation
Active and passive movements are restricted
Pathognomonic sign of frozen shoulder- loss of external rotation
Suspected case of adhesive capsulitis of shoulder, evaluation through assessment scales
Investigation to rule out other pathologies
Idiopathic (Primary)
Secondary (with some other disease pathologies)
Individualized homoeopathic treatment
General management such as physiotherapy and management of other disease pathologies
Improvement
YES
Continue homoeopathic treatment
Check for complete resolution
If resolution is complete
If resolution is incomplete
Stop treatment
Reassess the case and give appropriate homoeopathic medicine/integrative care
NO
Consider for standard/ conventional treatment and give homoeopathy as an add-on therapy
RED FLAGS
Trauma, weakness (acute cuff tear)
Any mass or swelling (tumor)
Red skin, fever, systemically unwell (infection)

CHAPTER 3

ANXIETY DISORDERS

ANXIETY DISORDERS

CASE DEFINITION

Anxiety disorders include disorders that share features of excessive fear and anxiety and related behavioural disturbances. The key features of generalized anxiety disorder are persistent and excessive anxiety and worry about various domains, including work and school performance that the individual finds difficult to control. In addition, the individual experiences physical symptoms, including restlessness or feeling keyed up or on edge; being easily fatigued; concentrating difficult or mind going blank; irritability; muscle tension; and sleep disturbance.[1,2]

INCIDENCE/ PREVALENCE

- Many of the anxiety disorders develop in childhood and tend to persist if not treated. Most occur more frequently in females than in males (approximately 2:1 ratio).
- Generalized anxiety disorder prevalence rate in countries is 0.4% to 3.6% globally. Females are twice as likely as males to experience generalized anxiety disorder. The prevalence rises in middle age and declines across the later years of life.[1]
- In India, the prevalence rate is 16.5 per 1000 population. The rural/urban ratio for anxiety neurosis in India is 100/106.[3]

AETIOLOGY & RISK FACTORS[4,5]

The causes of anxiety disorders are a combination of factors including genetic, environmental, psychological and developmental. Anxiety disorders can run in families, suggesting that a combination of genes and environmental stresses can produce the disorders. Specific factors include:

- Shyness, or behavioural inhibition, in childhood
- Females are more on risk than males
- Having a few economic resources
- Being divorced or widowed
- Exposure to stressful life events in childhood and adulthood
- Anxiety disorders in close biological relatives
- Parental history of mental disorders.

CLASSIFICATION[1]

According to DSM V, anxiety disorders can be classified as follows:

- Generalised anxiety disorder
- Panic disorder

1 American Psychiatric Association.Diagnostic And Statistical Manual of Mental Disorders. 5th ed. Arlington, VA: American Psychiatric Association; 2013:189-233.
2 Pine DS. Anxiety disorders: Introduction and overview. In: Sadock BJ, Sadock VA, Ruiz P, editors. Kaplan and Sadock's Comprehensive Textbook of Psychiatry.9th ed.USA:Lippincott Williams & Wilkins;2009:1840-1842.
3 Ganguli HC. Epidemiological findings on prevalence of mental disorders in India. Indian J Psychiatry. 2000;42(1):14–20.
4 National Institute of Mental Health. Anxiety Disorder [Internet]. 2018 [cited 2018 Feb 13]. Available from:https://www.nimh.nih.gov/health/topics/anxiety-disorders/index.shtml
5 American Psychiatric Association.Anxiety Disorders [Internet]. 2017 [cited 2019 Feb 13]. Available from:https://www.psychiatry.org/patients-families/anxiety-disorders/what-are-anxiety-disorders

- Separation anxiety disorder
- Selective mutism
- Specific phobia
- Social anxiety disorder
- Agoraphobia
- Anxiety due to other medical conditions

DIAGNOSIS[1]

Anxiety disorders differ from one another in the types of objects or situations that induce fear, anxiety, or avoidance behaviour, and the associated cognitive ideation. Thus, while anxiety disorders tend to be highly co-morbid with each other, they can be differentiated by close examination of the types of situations that are feared or avoided and the content of the associated thoughts or beliefs. The diagnostic criteria according to DSM V are:

Generalised Anxiety Disorder

1) Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).
2) The individual finds it difficult to control the worry.
3) The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms having been present for more days than not for the past 6 months;
    - Restlessness or feeling keyed up or on edge
    - Being easily fatigued
    - Difficulty in concentrating or mind going blank
    - Irritability
    - Muscle tension
    - Sleep disturbance (difficulty in falling or staying asleep, or restless, unsatisfying sleep).
4) The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
5) The disturbance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition (e.g., hyperthyroidism).
6) The disturbance is not better explained by another mental disorder (e.g., anxiety or worry about having panic attacks in panic disorder, negative evaluation in social anxiety disorder [social phobia], contamination or other obsessions in obsessive-compulsive disorder, separation from attachment figures in separation anxiety disorder, reminders of traumatic events in posttraumatic stress disorder, gaining weight in anorexia nervosa, physical complaints in somatic symptom disorder, perceived appearance flaws in body dysmorphic disorder, having a serious illness in illness anxiety disorder, or the content of delusional beliefs in schizophrenia or delusional disorder).

Panic Disorder

1) Recurrent unexpected panic attacks. A panic attack is an abrupt surge of intense fear or intense discomfort that reaches a peak within minutes, and during which time four (or more) of the following symptoms occur;

    - Palpitations, pounding heart, or accelerated heart rate
    - Sweating
    - Trembling or shaking
    - Sensations of shortness of breath or smothering
    - Feelings of choking
    - Chest pain or discomfort
    - Nausea or abdominal distress
    - Feeling dizzy, unsteady, light-headed, or faint
    - Chills or heat sensations
    - Parasthesias (numbness or tingling sensations)
    - Derealisation (feelings of unreality) or depersonalization (being detached from oneself)
    - Fear of losing control or "going crazy"
    - Fear of dying.

2) At least one of the attacks has been followed by 1 month (or more) of one or both of the following:

    - Persistent concern or worry about additional panic attacks or their consequences (e.g., losing control, having a heart attack, "going crazy").
    - A significant maladaptive change in behaviour related to the attacks (e.g., behaviours designed to avoid having panic attacks, such as avoidance of exercise or unfamiliar situations).

3) The disturbance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition (e.g., hyperthyroidism, cardiopulmonary disorders).
4) The disturbance is not better explained by another mental disorder (e.g., the panic attacks do not occur only in response to feared social situations, as in social anxiety disorder: in response to circumscribed phobic objects or situations, as in specific phobia: in response to obsessions, as in obsessive-compulsive disorder: in response to reminders of traumatic events, as in post-traumatic stress disorder: or in response to separation from attachment figures, as in separation anxiety disorder).

Separation Anxiety Disorder

1) Developmentally inappropriate and excessive fear or anxiety concerning separation from those to whom the individual is attached, as evidenced by at least three of the following:

- Recurrent excessive distress when anticipating or experiencing separation from home or from major attachment figures
- Persistent and excessive worry about losing major attachment figures or about possible harm to them, such as illness, injury, disasters, or death
- Persistent and excessive worry about experiencing an untoward event (e.g., getting lost, being kidnapped, having an accident, becoming ill) that causes separation from a major attachment figure
- Persistent reluctance or refusal to go out, away from home, to school, to work, or elsewhere because of fear of separation
- Persistent and excessive fear of or reluctance about being alone or without major attachment figures at home or in other settings
- Persistent reluctance or refusal to sleep away from home or to go to sleep without being near a major attachment figure
- Repeated nightmares involving the theme of separation
- Repeated complaints of physical symptoms (e.g., headaches, stomach aches, nausea, vomiting) when separation from major attachment figures occurs or is anticipated

2) The fear, anxiety, or avoidance is persistent, lasting at least 4 weeks in children and adolescents and typically 6 months or more in adults.
3) The disturbance causes clinically significant distress or impairment in social, academic, occupational, or other important areas of functioning.
4) The disturbance is not better explained by another mental disorder, such as refusing to leave home because of excessive resistance to change in autism spectrum disorder; delusions or hallucinations concerning separation in psychotic disorders; refusal to go outside without a trusted companion in agoraphobia; worries about ill health or other harm befalling significant others in generalized anxiety disorder; or concerns about having an illness in illness anxiety disorder.

Social Anxiety Disorder

1) Marked fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny by others. Examples include social interactions (e.g., having a conversation, meeting unfamiliar people), being observed (e.g., eating or drinking), and performing in front of others (e.g., giving a speech).
2) The individual fears that he or she will act in a way or show anxiety symptoms that will be negatively evaluated (i.e., will be humiliating or embarrassing: will lead to rejection or offend others).
3) The social situations almost always provoke fear or anxiety.
4) The social situations are avoided or endured with intense fear or anxiety.
5) The fear or anxiety is out of proportion to the actual threat posed by the social situation and to the socio-cultural context.

6) The fear, anxiety, or avoidance is persistent, typically lasting for 6 months or more.
7) The fear, anxiety, or avoidance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
8) The fear, anxiety, or avoidance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition.
9) The fear, anxiety, or avoidance is not better explained by the symptoms of another mental disorder, such as panic disorder, body dysmorphic disorder, or autism spectrum disorder.
10) If another medical condition (e.g., Parkinson's disease, obesity, disfigurement from bums or injury) is present, the fear, anxiety, or avoidance is clearly unrelated or is excessive.

Selective Mutism

1) Consistent failure to speak in specific social situations in which there is an expectation for speaking (e.g., at school) despite speaking in other situations.
2) The disturbance interferes with educational or occupational achievement or with social communication.
3) The duration of the disturbance is at least 1 month (not limited to the first month of school).
4) The failure to speak is not attributable to a lack of knowledge of, or comfort with, the spoken language required in the social situation.
5) The disturbance is not better explained by a communication disorder (e.g., childhood-onset fluency disorder) and does not occur exclusively during the course of autism spectrum disorder, schizophrenia, or another psychotic disorder.

Agoraphobia

1) Marked fear or anxiety about two (or more) of the following five situations:

    - Using public transportation (e.g. automobiles, buses, trains, ships, planes)
    - Being in open spaces (e.g. parking lots, marketplaces, bridges)
    - Being in enclosed places (e.g. shops, theatres, cinemas)
    - Standing in line or being in a crowd
    - Being outside of the home alone.

2) The individual fears or avoids these situations because of thoughts that escape might be difficult or help might not be available in the event of developing panic-like symptoms or other incapacitating or embarrassing symptoms (e.g., fear of falling in the elderly; fear of incontinence).
3) The agoraphobic situations almost always provoke fear or anxiety.
4) The agoraphobic situations are actively avoided, require the presence of a companion, or are endured with intense fear or anxiety.
5) The fear or anxiety is out of proportion to the actual danger posed by the agoraphobic situations and to the socio-cultural context.
6) The fear, anxiety, or avoidance is persistent, typically lasting for 6 months or more.

7) The fear, anxiety, or avoidance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
8) If another medical condition (e.g., inflammatory bowel disease, Parkinson's disease) is present, the fear, anxiety, or avoidance is clearly excessive.
9) The fear, anxiety, or avoidance is not better explained by the symptoms of another mental disorder—for example, the symptoms are not confined to specific phobia, situational type; do not involve only social situations (as in social anxiety disorder): and are not related exclusively to obsessions (as in obsessive-compulsive disorder), perceived defects or flaws in physical appearance (as in body dysmorphic disorder), reminders of traumatic events (as in post-traumatic stress disorder), or fear of separation (as in separation anxiety disorder).

Specific Phobia

1) Marked fear or anxiety about a specific object or situation (e.g., flying, heights, animals, receiving an injection, seeing blood).
2) The phobic object or situation almost always provokes immediate fear or anxiety.
3) The phobic object or situation is actively avoided or endured with intense fear or anxiety.
4) The fear or anxiety is out of proportion to the actual danger posed by the specific object or situation and to the socio-cultural context.
5) The fear, anxiety, or avoidance is persistent, typically lasting for 6 months or more.
6) The fear, anxiety, or avoidance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
7) The disturbance is not better explained by the symptoms of another mental disorder, including fear, anxiety, and avoidance of situations associated with panic-like symptoms.
8) Or other incapacitating symptoms (as in agoraphobia): objects or situations related to obsessions (as in obsessive-compulsive disorder); reminders of traumatic events (as in post-traumatic stress disorder); separation from home or attachment figures (as in separation anxiety disorder); or social situations (as in social anxiety disorder).

Anxiety disorders due to other medical conditions

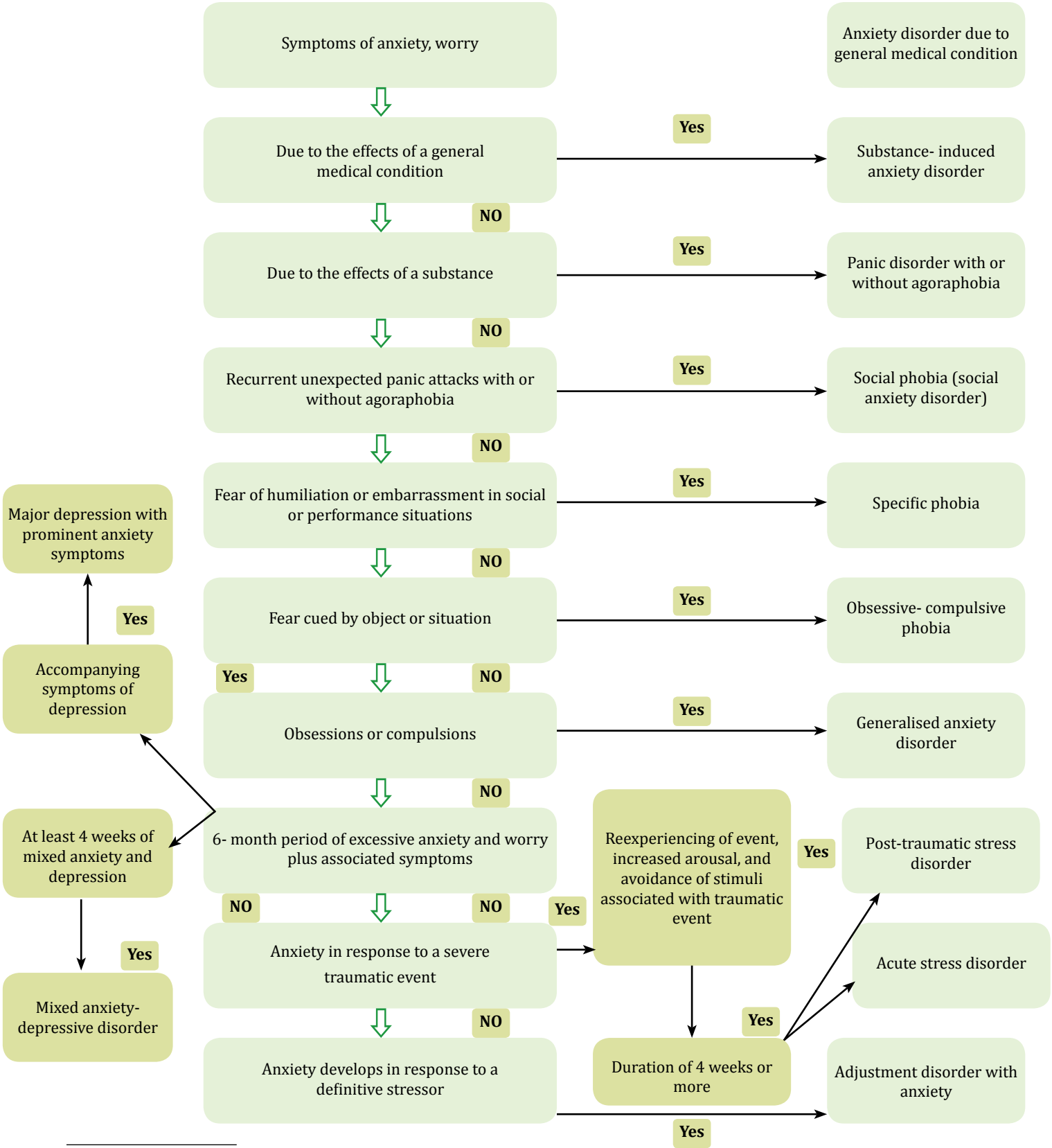
1) Panic attack or anxiety is predominant in the clinical picture.
2) There is evidence from the history, physical examination, or laboratory findings that the disturbance is the direct pathophysiological consequence of another medical condition.
3) The disturbance is not better explained by another mental disorders.
4) The disturbance does not occur exclusively during the course of a delirium.
5) The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

DIFFERENTIAL DIAGNOSIS[1,6]

Conditions	Causes	Differential features
Normal Anxiety	Worry	This is a normal human behaviour, and it may be difficult to define a cut-off point distinguishing normal or trait anxiety (i.e., a relative stable tendency to perceive various situations as threatening) from anxiety disorders. However, individuals suffering from a "disorder" exhibit significant distress and impairment in functioning as a result of their anxiety symptoms
Psychiatric conditions	Major depressive disorder	They exhibit high rates of dysphoric mood, psychomotor retardation, suicidal ideation, guilt, hopelessness and helplessness, as well as more work impairment than patients with anxiety disorders
	Panic disorder	They are characterised by the presence of panic attacks, i.e. recurrent discrete episodes of intense anxiety or fear associated with a cluster of somatic symptoms reflecting autonomic hyperactivity
	Obsessive-compulsive disorder	In this, there are obsessions and compulsions, they are often senseless and are frequently accompanied by time consuming compulsions designed to reduce mounting anxiety
	Post-traumatic stress disorder	The symptoms in PTSD follow exposure to a traumatic event and are characterised by avoidance of reminders of the event and persistent re-experiencing of the traumatic event
	Acute stress disorder	It does not persist for more than 4 weeks
	Adjustment disorders	In this anxiety occurs in response to a specific life stressor or stressors and generally does not persist for more than 6 months
	Autism Spectrum Disorder	Social anxiety and social communication deficits are hallmarks of autism spectrum disorder
Medical conditions	Parkinson's disease, Multiple sclerosis, Hyperthyroidism, Hyperparathyroidism, Seizure disorders, Pheochromocytoma, Vestibular dysfunctions, Cardiopulmonary conditions	Many general medical conditions may present with prominent anxiety symptoms. If not identified and properly addressed, these conditions may adversely affect the treatment outcome of the anxious patient. Appropriate laboratory tests or physical examinations may be helpful in determining the etiological role of another medical condition
Medications/ substances	Cocaine, amphetamines, caffeine, cannabis, alcohol, barbiturates etc.	Anxiety disorders frequently occur in association with intoxication and withdrawal from several classes of substances. A detailed history should be taken, history of substance or medication (e.g., a drug of abuse, exposure to a toxin) will be there

6 Cameron OG. The differential diagnosis of anxiety. Psychiatric and medical disorders. Psychiatr Clin North Am. 1985 Mar;8(1):3-23.

Diagnostic decision tree for Anxiety disorders[7]



[7] Kay J, Tasman A. Anxiety Disorders: Generalised Anxiety Disorder. Essentials of Psychiatry. England: John Wiley & Sons Ltd;2006: 642-644.

RED FLAGS[8]

- Demonstrating excessive distress out of proportion to the situation: crying, physical symptoms, sadness, anger, frustration, hopelessness, embarrassment
- Easily distressed, agitated or angry when in a stressful situation
- Repetitive reassurance questions, "what if" concerns, inconsolable, won't respond to logical arguments
- Headaches, stomach aches, regularly too sick to do normal daily work
- Anticipatory anxiety, worrying hours, days, weeks ahead
- Disruptions of sleep with difficulty in falling asleep, frequent nightmares, difficulty in sleeping alone
- Perfectionism, self-critical, very high standards that make nothing good enough
- Overly-responsible, people pleasing, excessive concern that others are upset with him or her, unnecessary apologizing
- Demonstrating excessive avoidance: refuses to participate in expected activities
- Excessive time spent consoling about distress with ordinary situations.

EVALUATION AND ASSESSMENT

Disorder-specific scales are available to better characterize the severity of each anxiety disorder and to capture change in severity over time. For ease of use, particularly for individuals with more than one anxiety disorder, these scales have been developed to have the same format (but different focus) across the anxiety disorders, with ratings of behavioural symptoms, cognitive ideation symptoms, and physical symptoms relevant to each disorder.[1]

1. Performing a diagnostic evaluation

Psychiatric evaluation and physical examination are necessary. It includes history of present illness, current symptoms; past psychiatric history, general medical history and history of substance use, personal history (e.g. psychological development, life events and response to those events), social, occupational and family history; review of the patient's medications; physical and mental status examination and adequate diagnostic tool and criteria. Diagnose GAD according to ICD-10 (W.H.0,1992).

Anxiety should not be due to the other Axis I disorder (e.g. mood disorder, psychotic disorder, social phobia, OCD, somatization disorder, hypochondriasis, PTSD) or a general medical condition (e.g. hyperthyroidism) or substance use disorder (intoxication or withdrawal).

2. Evaluating particular symptoms

Patients experience excessive anxiety but many of them experience panic attacks, which may worsen the clinical picture. The prolonged illness may cause depressive symptoms with emergence of suicidality and substance abuse.

8 Chansky TE. Normal Anxiety and Red Flags [Internet]. 2019 [cited 2019 Feb 13]. Available from: http://tamarchansky.com/tools/normal-anxiety-red-flags

3. Evaluating severity of functional impairment

Many may continue to function in their social and occupational lives with some impairment, others may become severely incapacitated and give up their jobs and social duties. The impairment in different areas can be assessed by self-administered visual analog scale.

4. Mental state examination[9]

The mental status examination is a structured assessment of the patient's behavioural and cognitive functioning. It includes descriptions of the patient's appearance and general behaviour, level of consciousness and attentiveness, motor and speech activity, mood and affect, thought and perception, attitude and insight, the reaction evoked in the examiner, and, finally, higher cognitive abilities. The specific cognitive functions of alertness, language, memory, constructional ability, and abstract reasoning are the most clinically relevant. It should be done at the end of the overall evaluation when the patient can be placed most at ease and when some degree of rapport has been established between the examiner and the patient. The structured mental status examination should focus on the following: Level of consciousness, Appearance and general behaviour, Speech and motor activity, Affect and mood, Thought and perception, Attitude and insight, Examiner's reaction to the patient, Cognitive abilities (Attention, Language, Memory, Constructional ability and praxis and Abstract reasoning).

Some of the scales are:

- Hamilton Anxiety Rating Scale (HAM-A)[10]
- GAD-Q-IV for Generalized Anxiety Disorder[11]
- Generalized Anxiety Disorder 7 – GAD-7[12]
- Severity Measure for Panic Disorder—Adult for Panic Disorder[13]
- The State-Trait Anxiety Inventory (STAI)[14]
- Beck Anxiety Inventory (BAI)[11]
- Hospital Anxiety and Depression Scale-Anxiety (HADS-A)[11]
- Depression Anxiety Stress Scales – DASS-21[15]
- Leibowitz Social Anxiety Scale – LSAS[16]

9 Martin DC. The Mental Status Examination. In: Walker HK, Hall WD, Hurst JW, editors. Clinical Methods: The History, Physical, and Laboratory Examinations. 3rd ed. Boston: Butterworths; 1990. Chapter 207. [Cited March 11] Available from: https://www.ncbi.nlm.nih.gov/books/NBK320/

10 Hamilton M. The assessment of anxiety states by rating. J Med Psychol. 1959; 32(1):50–55.

11 Newman MG, Zuellig AR, Kachin KE, Constantino MJ, Przeworski A, Erickson T, et al. Preliminary Reliability and Validity of the Generalized Anxiety Disorder Questionnaire-IV: A Revised Self-Report Diagnostic Measure of Generalized Anxiety Disorder. Behavior Therapy.2002;33(2):215-233.

12 Spitzer RL, Kroenke K, Williams JB, Löwe, B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Archives of internal medicine. 2006;*166*(10):1092.

13 Craske M, Wittchen U, Bogels S, Stein M, Andrews G, Lebeu R. Severity Measure for Panic Disorder—Adult. American Psychiatric Association [internet]. 2013 [cited 2019 Feb 13]. Available from: https://www.psychiatry.org/File%20Library/Psychiatrists/Practice/DSM/APA_DSM5_Severity-Measure-For-Panic-Disorder-Adult.pdf

14 Julian LJ. Measures of anxiety: State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). Arthritis Care Res (Hoboken). 2011;63 (Suppl 11):467-72.

15 Lovibond PF, Lovibond SH. The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. Behav Res Ther. 1995; 33(3): 335-343.

16 Heimberg RG, Horner KJ, Juster HR, Safren SA, Brown EJ, Schneier FR, et al. Psychometric properties of the Liebowitz Social Anxiety Scale. Psychological medicine.1999; *29*(1):199.

- Overall Anxiety Severity and Impairment Scale – OASIS[17]
- Patient Health Questionnaire 4 – PHQ-4[18]
- PENN State Worry Questionnaire – PSWQ[19]
- Social Phobia Inventory – SPIN[20]

PREVENTION

Studies show that early intervention is effective in reducing the development of Anxiety disorder[21]. Following community and self-help approach can be helpful in reducing the impact of Anxiety related disorder:[4,22]

- Stay active
- Regular exercise with healthy diet
- Stress identification and management techniques
- Get help early from a support groups (in-person or online) which can provide an opportunity to share experiences and coping strategies
- Avoid alcohol, caffeine or drug use.

MANAGEMENT

General management

Anxiety disorders are the most prevalent psychiatric disorder and are associated with a high burden of illness. Anxiety disorders are often under recognized and ignored in primary care. Treatment is indicated when a patient shows marked distress or suffers from complications resulting from the disorder.[20]

The goal of management is to provide relief in psychological and somatic symptoms and minimize the impairment. This can be addressed in following ways:[23]

- Identify the anxiety disorder by keeping high degree of suspicion
- Rule out any medical cause of the symptoms
- Provide psycho education
- Provide appropriate psychological or pharmacological intervention for immediate relief as well as long term treatment
- Know when to refer.

17 Norman SB, Hami Cissell S, Means-Christensen AJ, Stein MB. Development and validation of an overall anxiety severity and impairment scale (OASIS). Depression and anxiety. 2006;23(4):245-249.

18 Kroenke K, Spitzer RL, Williams JB, Löwe B. An ultra-brief screening scale for anxiety and depression: the PHQ-4. Psychosomatics 2009;*50*(6): 613.

19 Meyer TJ, Miller ML, Metzger RL, Borkovec TD. Development and validation of the penn state worry questionnaire. Behaviour research and therapy.1990; 28(6):487-495.

20 Connor KM, Davidson JR, Churchill LE, Sherwood A, Weisler RH, FOA E. Psychometric properties of the Social Phobia Inventory (SPIN) New self-rating scale. The British Journal of Psychiatry.2000; 176(4): 379-386.

21 Dadds MR, Spence SH, Holland DE, Barrett PM, Laurens KR. Prevention and early intervention for anxiety disorders: A controlled trial. Journal of Consulting and Clinical Psychology.1997; 65(4): 627-635.

22 National Institute of Mental Health. Anxiety Disorders [internet].2018[cited 13 Feb 2019]. Available at: https://www.nimh.nih.gov/health/topics/anxiety-disorders/index.shtml#part_145333

23 Gautam S, Jain A, Gautam M, Vahia VN, Gautam A. Clinical Practice Guidelines for the Management of Generalised Anxiety Disorder (GAD) and Panic Disorder (PD). Indian J Psychiatry. 2017 Jan;59(Suppl 1):67-73.

Psychotherapy

Cognitive behaviour therapy- Cognitive-Behavioural Therapy (CBT) is very helpful in providing relief to the symptoms of anxiety disorder. All of these need the services of a specially trained counsellor/ psychotherapist to assess the needs of the patients and plan the nature of the intervention. Most of the CBT begin with an assessment, Patient education and specific treatment planning. It typically includes psychoeducation, self-monitoring, relaxation, problem solving and restructuring of worry related distorted beliefs. The patient is gradually exposed to feared situation or bodily symptoms. Cognitive therapy focuses on identifying, challenging, and then neutralizing unhelpful or distorted thoughts underlying anxiety disorders. Exposure therapy focuses on confronting the fears underlying an anxiety disorder to help people engage in activities they have been avoiding. Exposure therapy is sometimes used along with relaxation exercises and/or imagery.[13,24]

i. Behavioural techniques- To avoid harm to self or involvement in unnecessary activities
ii. Supportive psychotherapy- Can be used from the family perspective to provide support to individual to overcome the feared objects
iii. Insight oriented psychotherapy- Psychodynamic approach can be of useful to bring insight in patients after detailed history evaluation.

Goals

- *Psycho-education*: Directs explanation of the symptoms and disorder to the patient and the family. All patients with anxiety disorders require supportive talks and attention to the emotional problems that are associated with the anxiety disorder. Psychoeducation includes information about the physiology of the bodily symptoms of anxiety reactions and the rationale of available treatment possibilities.[25]
- Monitoring of anxiety
- *Cognitive restructuring*: Corrects the hypothesized cognitive distortions and helps to identify and counter fear of bodily sensations.

Combined pharmacological and psychotherapeutic intervention

Long-term outcome is better when they are used in combination. Hypnosis, autogenic training, and biofeedback or complementary medicine methods such as acupuncture, osteopathy, or homeopathy are often recommended for the treatment of clinical anxiety.

Formulating treatments and choice of treatment settings

The aim of management is to provide relief in psychological and somatic symptoms and minimize the impairment. This can be addressed in following ways:

24 Huppert JD, Cahill SP, Foa EB. Anxiety Disorders: Cognitive-Behavioral Therapy. In: Sadock BJ, Sadock VA, Ruiz P, editors. Kaplan & Sadock's Comprehensive Textbook of Psychiatry. 9th ed. USA:Lippincott Williams & Wilkins; 2009:1915-1925
25 Bandelow B, Michaelis S, Wedekind D. Treatment of anxiety disorders. Dialogues Clin Neurosci. 2017;19(2):93-107.

- *Establishing and maintaining a therapeutic alliance*-The treatment of GAD may be long lasting, hence the alliance is crucial. Understanding the life events, the extent and severity of symptoms requires confiding and lasting therapeutic relationship. Attention to the patient's worries and fears are essential for long term gains.
- *Monitoring the patient's psychiatric status*-The symptomatic improvement in psychological and autonomic symptoms leads to greater confidence in the treating doctor. The anxiety goes slowly with treatment and bursts of severe symptoms during the treatment need constant monitoring.
- *Pharmacotherapy*-The drug treatment is done for 6-12 months, some evidence indicate that treatment should be long term.
- *Goals*-Reduce psychological and autonomic symptoms and other co-morbid conditions. Improve occupational and social functioning.
- *The patient and family education*-This seemingly unimportant aspect is most relevant to Indian settings where awareness of psychiatric illness and its realization and need for treatment with compliance is little. Many feel dejected, angry, isolated and may have suicidal ideas. Family and the patient need to be told that this is like any other illness that needs treatment and success depends on compliance.
- *Relapse*-The education that the illness is a chronic relapsing illness is essential and emergence of anxiety with or without treatment should be promptly treated. Sudden discontinuation may lead to emergence of withdrawal symptoms thus early recognition by the patient and the family helps in prompt treatment.
- *Stop treatment*-Decision to stop treatment will depend on clinical response of the patients. Usually the treatment is stopped in a tapering manner after at least 6 months stability of clinical improvement and asymptomatic status of the patient. Before stopping the treatment, the nature of illness, possibilities of recurrence, response to triggers and his/her ability to cope with the situation should be discussed at length. Patient's personal view should be included in decision making of stopping the treatment. Patient should be encouraged to adapt alternative methods of anxiety reduction like yoga, pranayama, relaxation techniques including progressive muscular relaxation (PMR)/Shavasan etc. which can be mastered by him before weaning off medicines.

Homoeopathic management

Homoeopathy can play a fundamental role in treating anxiety disorders. Constitutional homoeopathic treatment with counselling can effectively manage this disease.

Mental symptoms such as anxiety, depression and insomnia are amongst the common reasons for individuals to seek treatment with complementary therapies in general and homoeopathy in particular.

There are few researches done in Anxiety disorders[26, 27,28,29,30] using homoeopathic intervention which direct to its positive effects. Besides research, the enormous literatures and homoeopathic textbooks have plenty of information pertaining to this condition.[31,32,33,34] Homoeopathic medicines along with counseling, psychotherapies shall be of immense help for recovery of the patients.

There are number of homeopathic medicines available in homeopathic literatures,[35,36] which are also supported by various researches[20,21,22] for the treatment of anxiety disorders. Hahnemann has also described about mental diseases and their management in Organon of Medicine[37] in aphorisms 210 to 230. Synthesis repertory[30] contains around 485 remedies under rubric 'Anxiety' along with the various sub-rubrics under it.

Medicines like *Arsenicum album* and *Aconitum napellus* etc. are very useful in cases of panic attacks or disorders. Keynote symptoms related to anxiety disorder of some frequently indicated medicines are: ***Opium:*** Used in post-traumatic stress, also to overcome the fear. ***Calcarea arsenica:*** Great mental depression. The slightest emotion causes palpitation of heart. ***Kali arsenicosum:*** Eyes had a fixed look, face looked frightened and anxious; worse third day. Nervous depression and great nervousness. ***Kali carbonicum:*** Alternating moods. Very irritable. Anxiety felt in the stomach. ***Nitricum acidum:*** It is often employed when hate and mistrust are at their maximal expression. Great anxiety about his disease, constantly thinking about his past troubles. Anxious in evening. ***Apis mellifica:*** Despondent. Indicated with possessive jealousy. Whereas Aconite is helpful in acute attack of Anxiety. ***Colocynthis:*** Can provide relief in a case of acute anger. ***Digitalis purpurea:*** When there is anxiety about future, every shock strikes in the epigastrium. ***Cannabis indica:*** When there is anxious depression, constant fear of becoming insane. Excessive loquacity.

26 Prabhu RL, Ruckmani A, Venkatesan D, Madhusudhanan N, Pavithra R. Anxiolytic effect of homeopathic preparation of Pulsatilla nigricans in Swiss albino mice. Homeopathy. 2012; 101(3): 171-74.
27 Gelabert RZ. Clinical Study of the Effectiveness of Pluralist Homeopathy in Generalized Anxiety Disorder. Altern Integr Med. 2017; 6(4):250.
28 Magnani P, Conforti A, Zanolin E, Marzotto M, Bellavite P. Dose-effect study of Gelsemium sempervirens in high dilutions on anxiety-related responses in mice. Psychopharmacology.2010; 210(4):533–545.
29 Coppola L, Montanaro F. Effect of a homeopathic-complex medicine on state and trait anxiety and sleep disorders: a retrospective observational study. Homeopathy. 2013; 102(4): 254-61.
30 Marzotto M, Conforti A, Magnani P, Zanolin ME, Bellavite P. Effects of Ignatiaamara in mouse behavioural models.Homeopathy.2012;101(1): 57-67.
31 Allen HC. Keynotes and Characteristics with Comparisons of some of the Leading Remedies of the Materia Medica. 5th ed. Calcutta: Economic Homoeo Pharmacy; 1983.
32 Boericke W. New Manual of Homœopathic Materia Medica and Repertory. 9th Reprinted Ed. New Delhi: B Jain Publishers (P) Ltd; 2005.
33 Hering C. The Guiding Symptoms of our Materia Medica. Reprint ed. New Delhi: B Jain Publishers (P) Ltd; 2010.
34 Kent JT. Repertory of the Homœopathic Materia Medica.6th ed. Reprint ed. New Delhi: B Jain Publishers (P) Ltd; 2011.
35 Murphy R. Homeopathic Medical Repertory - a Modern Alphabetical and Practical Repertory. 3rd ed. New Delhi: B Jain Publishers (P) Ltd; 2013.
36 Schroyens F. Synthesis –Repertorium Homeopathicum Syntheticum. 9.1st ed. New Delhi: B Jain Publishers (P) Ltd; 2012.
37 Hahnemann S. Organon of Medicine. 5th & 6th ed. New Delhi: B Jain Publishers (P)Ltd; 2008.

The commonly prescribed homoeopathic medicines and their indications are given below:

Medicines	General Indications	Characteristic mental symptoms related to anxiety disorder
Aconitum napellus	*Physical and mental restlessness, and fright; complains and tension caused by exposure to dry, cold weather, checked perspiration; tingling, coldness and numbness; better in open air*	• Sudden, intense anxiety attacks and for post-traumatic anxiety • Great fear and anxiety of mind, with great nervous excitability; afraid to go out, to go into a crowd where there is any excitement or gathering of many people; to cross the street • Countenance expressive of fear; life is rendered miserable by fear; is sure his/her disease will prove fatal; predicts the day he/she will die • Physical *and* mental restlessness • Worse from music
Argentum nitricum	*Inco-ordination, loss of control and want of balance everywhere, mentally and physically; trembling in affected parts; Great desire for sweets however it aggravates; Splinter-like pains, Pains increase and decrease gradually; Time passes slowly; Prematurely aged look.; Impulsive; wants to do things in a hurry. Fear of heights; Melancholic; apprehensive of serious disease; Worse from warmth in any form, at night, from cold food, sweets, after eating at menstrual period, from emotion, left side; Better from eructation; fresh air; cold; pressure*	• Disease arises from unusual or long continued mental exertion • Mental anxiety – very impulsive; always in a hurry but accomplishes nothing; in continual motion; he walks fast • Fears to be late when there is plenty of time. Apprehension when ready to go to church or opera, bringing on diarrhoea • Fearfulness and anxiety about many things especially bridges, closed spaces, heights, and personal health. Fear of heights
Arsenicum album	*Chilly patient; rapid disproportionate prostration; burning pains better by heat (except headache); cadaveric odour of discharges and body; anxiety, anguish, fear for death and restlessness*	• Mentally restless, but physically too weak to move • Dread of death when alone, or, going to bed. Thinks disease is incurable and useless to take medicines • Attack of anxiety at night driving out of bed. Anxiety for others- what will happen when they cannot help me • Anxiety- hypochondriac- little symptoms will provoke a storm inside. Anxiety – when anything is expected of him. Anxiety when about to journey by railroad or while in a train • Worse after midnight

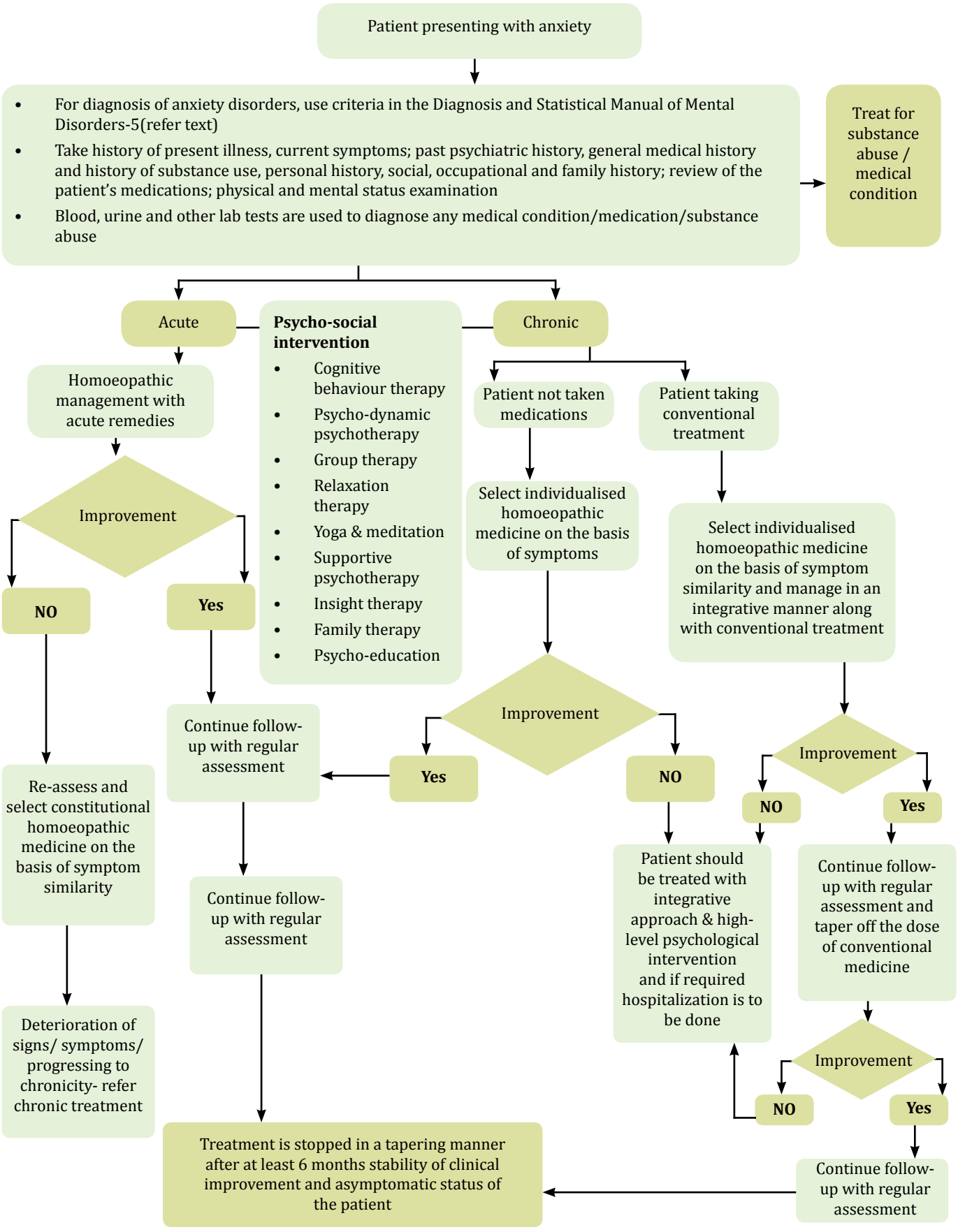
Medicines	General Indications	Characteristic mental symptoms related to anxiety disorder
Belladonna	*Congestion is the keynote of the medicine; hot, red skin, flushed face, glaring eyes, throbbing carotids; Excited mental state, delirium, restless sleep, convulsive movements; Dryness of mouth and throat with aversion to water; Pains that come and go suddenly*	• Delirium; furious; rages, bites, strikes; decide to escape. Loss of consciousness • Changeable temperament. Restless sleep, convulsive movements, neuralgic pains that come and go suddenly • No thirst, anxiety or fear • Worse from touch, jar, noise, after noon, lying down, looking at bright, shining objects • Better in semi-erect posture
Calcarea carbonica	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets; aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated*	• Fearful, shy, timid, slow and sluggish • Anxious when things are left undone or not going according to plan. Fears she will lose her reason or that people will observe her confusion of mind. People could think that he has become insane • Always try to conceal her anxiety. Anxiety on hearing cruelties, bad news. Feels complaints more when thinking about them • Excessive ill-humour and mischievous inclination, with obstinacy and a disposition to take everything in bad part. Indifference, apathy, and repugnance to conversation • Worse during full moon, from mental or physical exertion, standing
Gelsemium sempervirens	*Insidious onset of complaints; aching, tired, heavy, weak and sore; tremors; thirst less; dull, drowsy and dizzy; nervous, desires to be held, great depression from heat of sun or summer*	• Apprehensive and timid. Anxiety due to feelings of inadequacy, patient is always anxious that he hasn't the resources to do what he'd like to do • Fear of falling, crowds, and fainting (or heart attack) • Dread of performances of any kind, for fear of losing control or something terrible will happen • Vertigo, weakness, trembling, chills, diarrhoea, drowsiness, and even speechlessness from fright • Worse before a thunderstorm, emotion, or excitement, bad news, tobacco-smoking, when thinking of his ailments • Better from bending forward, by profuse urination, open air, continued motion, stimulants

Medicines	General Indications	Characteristic mental symptoms related to anxiety disorder
Hyoscyamus niger	*Increased cerebral activity, without inflammation; no control over urine &bowel; convulsions & twitching especially of the tongue; jealousy, loquacious, irritable, fear of being left alone; of running water even on hearing it; insects; snakes, of shinning objects, fire, glass, etc; aggravation at night*	• Very suspicious • Talkative, uncovers the body, jealous, foolish. Delirium, with an attempt to run away • Great restlessness, every muscle twitches. Low muttering speech • Worse during menses, after eating, when lying down
Ignatia amara	*Marked hyperaesthesia of all the senses, and a tendency to clonic spasms. Great contradiction; Worse in the morning, open air, after meals, coffee, smoking, liquids, external warmth. Better while eating, change of position. Hysteric women, sensitive, easily excited nature women having mild disposition, quick to perceive, rapid in execution*	• Mood swing. Easily offended. Silent grief. Contradiction aggravates • Bad effect of anger, grief or disappointed love. Broods in solitude over imaginary trouble • Anguish, esp. in the morning on waking, or at night, sometimes with palpitation of the heart • Anxious to do now this, now that, impatience
Kali phosphorium	*Easy perspiration, sensitivity to cold; Slightest labor seems a heavy task for them; Exhaustion after moderate mental effort. Anemia, insomnia, and indigestion are generally found in this remedy; Generally suited to anxious, nervous & irritable person*	• Hypochondriac; symptoms starts easily when touch and from noises • After effects of grief and fright. Physical ailments such as fatigue, dullness and lack of energy that are a result of anxiety • Persons who are easily stressed, over sensitive, insecure, irritable and despondent • Anxiety after being overworked • Indisposition to meet people but disinclined to converse. Forgets everything learned, he will not find his words when he is speaking • Worse from excitement, worry, mental and physical exertion, eating, cold, early morning • Better from warmth, rest

Medicines	General Indications	Characteristic mental symptoms related to anxiety disorder
Lycopodium clavatum	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi-dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4pm- 8 pm; right sided complaints or symptoms shifts from right to left; desire for warm foods and drinks, sweet; dominating, cranky, lack of self-confidence, precocious*	• Any new challenge creates anxiety due to lack of confidence. Constant fear of breaking down under stress • Apprehensive. Inclined to laugh and cry at same time. Head strong and haughty when sick • Responsibility in work or relationships can create debilitating anxiety and fear of failure, which may manifest in sexual difficulties, irritability, digestive complaints, and claustrophobia • Worse from heat or warm room, hot air, bed • Better by motion, after midnight, on getting cold
Phosphorus	*Tall, fast growing child with tendency to stoop; hemorrhagic tendency; Chilly patient. Craving for salt, cold foods and drinks. Oversensitive to external impressions; Nervous and affectionate, anxious esp. during thunderstorm*	• Desire to be magnetized. Great lowness of spirits, easily vexed • Fearfulness, as if something were creeping out of every corner, of robbers. Ecstasy. Dread of death when alone • Brain feels tired. Insanity, with an exaggerated idea of one's own importance. Excitable, produces heat all over. Restless, fidgety. Indifferent • Worse from touch, physical or mental exertion, twilight, change of weather, evening, during a thunderstorm, ascending stairs • Better in dark, cold, open air, sleep
Psorinum	*Extremely chilly patient, wants to cover even in hottest summer weather; pale, delicate, sickly; scanty perspiration; offensive discharges; wakes up at night feeling hungry; anxious, fearful, child is good all day while restless and troublesome at night*	• Extremely psoric patients, nervous restless, easily startled • Anxious, full of fear; evil forebodings. Melancholy, deep and persistent; religious • Worse from coffee, changes of weather, in hot sunshine, from cold • Better from heat

Medicines	General Indications	Characteristic mental symptoms related to anxiety disorder
Pulsatilla nigricans	*Hot patient; marked changeability of symptoms; aversion to fatty foods, warm foods and drinks, dislikes butter; thirstlessness with great dryness of mouth; tongue coated yellow or whitish; worse towards evening and in warm room, better in open air, by slow, gentle motion and cold applications; desire for company, mild, gentle, affectionate, yielding, weeping disposition*	• Need a great deal of consolation and reassurance • Easily discouraged. Fear of rejection • Morbid dread of the opposite sex. Highly emotional • Fear to be alone in evening and they fear the dark when under the state of anxiety • Worse from heat, eating
Silicea terra	*Extremely chilly patient; all symptoms worse by cold except stomach complaints, which are ameliorated. Profuse, offensive discharges; sweats profusely especially on feet. Easy suppuration; glandular affinity; large head and distended abdomen; weak ankles, slow in learning to walk; constipation; Obstinate, head strong, cries when spoken kindly to, nervous, apprehensive, Oversensitive, irritable and fearful*	• Restless, fidgety, starts at least noise. Anxious, yielding, faint hearted • Fear of failure; literary work; pins, sharp objects. Lack self-confidence and fearful of new undertakings, especially speaking in public. Overly anxious about trifles (obsessive) • Persons overwork and exhaust themselves to avoid failure. Mental labor very difficult. Desire to be magnetized • Worse in new moon, in morning, from washing, during menses, uncovering, lying down, damp, cold • Better from warmth, wrapping up head, summer, in wet or humid weather
Stramonium	*Painlessness of complaints; chorea, mania and fever delirium; young plethoric children, furious, malicious, fearful, desires light and company, worse in the dark and solitude*	• Anxiety includes night terrors, nightmares, or dark thoughts while awake. People scared of the dark or being alone and are especially scared by thoughts of monsters or mysterious figures • Imaginations tend to worsen the anxiety. The person is anxious, obsessive-compulsive, and feels forsaken or alone in the wilderness; but a mild demeanour may mask violence of thought or action • Worse on looking at bright or shining objects, after sleep • Better from bright light, company, warmth

ALGORITHM FOR MANAGEMENT OF ANXIETY DISORDERS


Patient presenting with anxiety
For diagnosis of anxiety disorders, use criteria in the Diagnosis and Statistical Manual of Mental Disorders-5(refer text)
Take history of present illness, current symptoms; past psychiatric history, general medical history and history of substance use, personal history, social, occupational and family history; review of the patient's medications; physical and mental status examination
Blood, urine and other lab tests are used to diagnose any medical condition/medication/substance abuse
Treat for substance abuse / medical condition
Acute
Psycho-social intervention
Cognitive behaviour therapy
Psycho-dynamic psychotherapy
Group therapy
Relaxation therapy
Yoga & meditation
Supportive psychotherapy
Insight therapy
Family therapy
Psycho-education
Chronic
Homoeopathic management with acute remedies
Improvement
NO
Yes
Re-assess and select constitutional homoeopathic medicine on the basis of symptom similarity
Deterioration of signs/ symptoms/ progressing to chronicity- refer chronic treatment
Continue follow-up with regular assessment
Continue follow-up with regular assessment
Patient not taken medications
Patient taking conventional treatment
Select individualised homoeopathic medicine on the basis of symptoms
Improvement
Yes
NO
Select individualised homoeopathic medicine on the basis of symptom similarity and manage in an integrative manner along with conventional treatment
Improvement
NO
Yes
Patient should be treated with integrative approach & high-level psychological intervention and if required hospitalization is to be done
Continue follow-up with regular assessment and taper off the dose of conventional medicine
Improvement
NO
Yes
Continue follow-up with regular assessment
Treatment is stopped in a tapering manner after at least 6 months stability of clinical improvement and asymptomatic status of the patient

CHAPTER 4

APHTHOUS STOMATITIS

APHTHOUS STOMATITIS

CASE DEFINITION[1,2,3]

Aphthous stomatitis is one of most common ulcerative diseases associated mainly with the oral mucosa characterized by the extremely painful, recurring, solitary or multiple ulcers in the upper throat and non-keratinized oral mucosa. These types of ulcers are usually small, multiple, ovoid or round with circumscribed margins and gray or yellow floors and are encompassed by erythematous halo.

INCIDENCE/ PREVALENCE[4,5,6]

Aphthous stomatitis affects approximately 20% of the general population. It is slightly more common in girls and women as well as among affluent socioeconomic classes and countries. Age of onset may be during childhood, but more commonly in the second and third decades of life, becoming less common with advancing age. Aphthous stomatitis can be a manifestation of Behcet syndrome, systemic lupus erythematosus, reactive arthritis, or inflammatory bowel disease (especially Crohn's disease).

CLASSIFICATION[7,8,9,10]

It is classified into three types of recurrent aphthous stomatitis (RAS) based on clinical manifestation- Major recurrent aphthous stomatitis, Minor recurrent aphthous stomatitis and Herpetiform aphthous ulcers.

1) **Major Recurrent Aphthous Stomatitis**: Major RAS is occasionally referred to as Sutton's disease or peri-adenitis mucosa necrotica recurrens and is less common (approximately 10% to 15% of all RAS) yet more severe than minor RAS. Major RAS lesions are similar in appearance to those of minor RAS. However, they are larger than 10 mm in diameter; are deeper, often with scar, and can last for weeks to months. Major RAS usually has its onset after puberty and is chronic, persisting for up to 20 or more years. They occur on movable non-keratinizing oral surfaces (labial and buccal mucosa and floor of the mouth), but the ulcer borders may extend onto keratinized surfaces.

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1 Sharma D, Garg R. A Comprehensive Review on Aphthous Stomatitis, its Types, Management and Treatment Available. J Develop Drugs.2018;7(2):188.
2 Alli BY, Erinoso OA, Olawuyi AB. Effect of sodium lauryl sulfate on recurrent aphthous stomatitis: A systematic review, J Oral Pathol Med. 2019;48:358–364.
3 Nattah SS, Konttinen YT, Enattah NS, Ashammakhi N, Sharkey KA, Häyrinen-Immonen R. Recurrent aphthous ulcers today: a review of the growing knowledge. Int. J. Oral Maxillofac. Surg. 2004; 33: 221–234.
4 Plewa MC, Chatterjee K. Aphthous Stomatitis. StatPearls [Internet] 2020. [Cited 2020 Aug 24]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK431059/
5 Pederson A. Are recurrent oral apthous ulcers of viral etiology? Med Hypotheses.1991;36(3):206-210.
6 Queiroz SIML, Silva MVAD, Medeiros AMC, Oliveira PT, Gurgel BCV, Silveira ÉJDD. Recurrent aphthous ulceration: an epidemiological study of etiological factors, treatment and differential diagnosis. An Bras Dermatol. 2018; 93(3):341-346.
7 Namrata M, Abilasha R. Recurrent Apthous Stomatitis. International Journal of Orofacial Biology.2017;1(2):43-47.
8 Rivera C. Essentials of recurrent aphthous stomatitis (Review), Biomedical Reports.2019;11(2):47-50.
9 Zain RB. Classification, epidemiology and aetiology of oral recurrent aphthous ulceration/stomatitis. Annal Dent Univ Malaya.1999; 6: 34 - 37.
10 Edgar NR, Saleh D, Miller RA. Recurrent Aphthous Stomatitis: A Review. J Clin Aesthet Dermatol.2017;10(3):26-36.

2) **Minor Recurrent Aphthous Stomatitis**: Minor RAS have been reported to constitute 70%–87% of all forms of RAS. It manifests as recurrent, round, clearly defined, small, painful ulcers with shallow necrotic centers, raised margins, and erythematous halos. These lesions are 5–10 mm in diameter and have a gray-white pseudo-membrane. These lesions heal within 14–10 days without scarring. The most common location is on nonkeratinized oral mucosa (the labial and buccal mucosa and floor of the mouth). Lesions appear as single or multiple ulcers but can be distinguished from other mucocutaneous diseases based on their history, location, healthy appearance of adjacent tissues, and lack of distinguishing systemic features.

3) **Herpetiform aphthous ulcers**: The least common form of RAS is herpetiform aphthous ulcers, which afflict 5% to 10% of patients with RAS. It occurs more frequently in females, and onset is often in adulthood. Multiple small clusters of pinpoint ulcers characterize this rare form of RAS, and they occur throughout the oral cavity. They tend to be small (2–3 mm) and numerous (ranging from 10 to 100 ulcers) but can become confluent to produce larger, plaque-form, irregular lesions. Lesions last 7–30 days and have the potential to scar. Although these lesions are herpes like or herpetic form in nature, herpes simplex virus (HSV) cannot be cultured from these lesions.

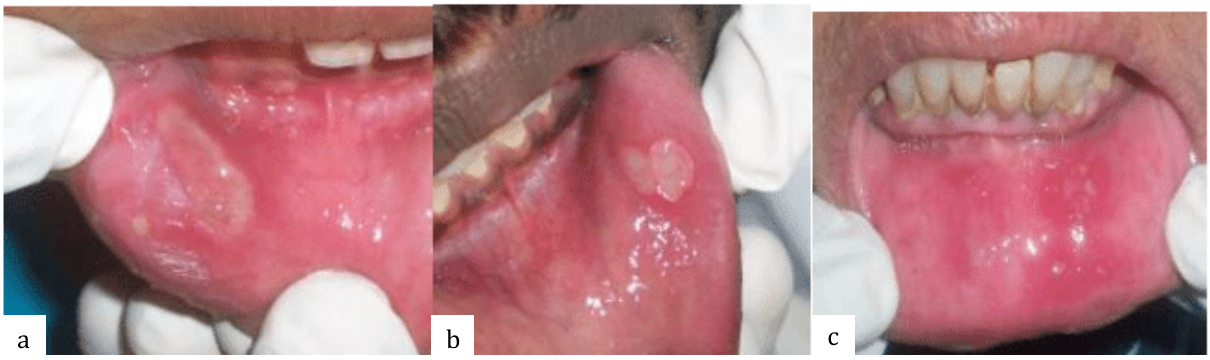

Figure 1: a) Major b) Minor c) Herpetiform RAS. Courtesy: Anu Shastri A., Srivastava R. Etiopathogenesis, Diagnosis and Recent Treatment Modalities for Recurrent Aphthous Stomatitis: A Review. International journal of contemporary medical research;2015.

AETIOLOGY AND RISK FACTORS[1,7,11,12,13,14,15]

The precise etiopathogenesis of aphthous stomatitis is not fully disclosed. The potential factors responsible for aphthous ulcers are described below:

11 Parkhill AL. Oral Mucositis and Stomatitis Associated with Conventional and Targeted Anticancer Therapy. Journal of Pharmacovigilance.2013;1(4).
12 Jurge S, Kuffer R, Scully C, Porter SR. Mucosal disease series. Number VI. Recurrent aphthous stomatitis. Oral Dis. 2006;12(1):1-21.
13 Lankarani KB, Sivandzadeh GR, Hassanpour S. Oral manifestation in inflammatory bowel disease: a review. World J Gastroenterol.2013;19(46):8571-9.
14 Gualtierotti R, Marzano AV, Spadari F, Cugno M. Main Oral Manifestations in Immune-Mediated and Inflammatory Rheumatic Diseases. J Clin Med. 2018;8(1):21.
15 Scully C, Hodgson T, Lachmann H. Auto-inflammatory syndromes and oral health. Oral Dis. 2008;14(8):690-699.

- **Genetic predisposition**: Genetic predisposition is responsible for about 40% of patients that have family history.
- **Mechanical injury**: Mechanical injury because of local anesthetic injections, dental treatments, sharp tooth and injury due to toothbrush may be susceptible to the occurrence of recurrent aphthous ulceration.
- **Microelement and vitamin B12 deficiencies**: Deficiencies of vitamin B12, folic acid, and iron may contribute to development of RAS.
- **Stress:** Patient often manifest increased stress with inception of aphthous ulcers and several studies have reported higher occurrence.
- **Food allergies**: Food such as chocolate, coffee, almonds, cereals, peanuts, strawberries, tomatoes, cheese and wheat flour containing gluten may be responsible for aphthous ulcers.
- **Microbial factors**: There might be an association between previously suspect L-forms of streptococci and RAS or the adenoviruses, herpes simplex virus (HSV), varicella- zoster virus or cytomegalovirus and RAS.
- **Immunopathogenesis**: There is rise in antibody dependent cell cytotoxicity and higher levels of serum immunoglobulins in patients with RAS.
- **Hormonal defects**: Women with RAS have cyclical oral ulceration related to the onset of menstruation or the luteal phase of the menstrual cycle. Complete remission during pregnancy has been reported with exacerbation occurring in the puerperium.
- **Drugs:** Drugs such as NSAIDs can cause oral ulcers identical to those of RAS.
- **Systemic diseases**: Behcet's disease, Celiac disease, MAGIC syndrome, Sweet's syndrome, PFAPA syndrome, Cyclic neutropenia, Inflammatory bowel disease (IBD), Rheumatic diseases (e.g., systemic lupus erythematosus), autoinflammatory diseases.
- **Anticancer therapy:** The damage inflicted upon the oral cavity by various modalities of cancer treatment can result in a variety of conditions including oral mucositis and stomatitis.

Disease Phases[10]

The disease sequence comprises the following stages:

- Premonition (24 h) comprising symptoms but no visible signs of disease
- Pre-ulcerative (18 h to 3 days) comprising erythema and mild edema
- Ulcerative (1to 16 days) comprising active ulceration
- Healing (4 to 35 days, usually <21 days), involving a decrease in symptoms and progressive healing; and remission, in which there is no evidence of ulcers.

DIAGNOSIS

The diagnosis of RAS is based on history and clinical findings. There is no specific diagnostic test, but there is a need to exclude other possible causes of recurrent ulcers as mentioned under aetiology and risk factors.[16]

16 Scully C, Porter S. Oral mucosal disease: recurrent aphthous stomatitis. Br J Oral Maxillofac Surg.2008;46(3):198-206.

CLINICAL FEATURES[16,17,18,19]

1) Minor aphthae

The prodromal stage of ulceration is variable, but there is usually a sensation described as "burning" or "prickling" for a short period before the ulcers appear.

- *Number:* There are typically 1-4 ulcers in each attack
- *Duration:* Each lesion lasts for 10 –14 days. The variability in times of recovery can depend on the area affected or on whether superinfection occurred.
- *Location:* These are usually confined to the nonkeratinized parts of the mucosa and therefore do not involve the hard palate or the gingiva.
- *Scars*: Heal without scarring.

2) Major aphthae

These lesions are deeper, larger and last longer than minor aphthae. As a result of the long periods involved, there is a greater tendency to produce a heaped-up margin which, when a single ulcer is seen, may lead to the suspicion that the lesion is malignant. These lesions cause substantial pain associated with fever, dysphagia and malaise.

- *Number*: There are usually no more than one or two lesions in each attack.
- *Duration*: They persist longer than minor aphthae and can last for weeks or months.
- *Location*: They have a predilection for the posterior part of the mouth, particularly the soft palate and pharyngeal wall or tonsillar fauces. In some patients, the tongue is the site of predilection.
- *Scars*: Often leave a scar after healing.

3) Herpetiform aphthae

The herpetiform type, like the other forms of RAS, occurs usually on mobile mucosa and not on attached mucosa like a true herpes infection. The age of onset of herpetiform aphthae is later than the other types with initial episode usually presenting in the second or third decade of life.

- *Number:* The ulcers may number 50 or more, and although each individual ulcer rarely exceeds 2 mm in diameter, groups of ulcers may coalesce to form compound ulcers with irregular outlines.
- *Duration*: This type of cluster forming ulcers can take up to 7-14 days to heal but it can vary depending upon period of intervals between recurrences.
- *Location*: Occurs usually on mobile mucosa.
- *Scars*: These ulcers do not leave scars after healing.

17 Femiano F, Lanza A, Buonaiuto C, Gombos F, Nunziata M, Piccolo S, et al. Guidelines for Diagnosis and Management of Aphthous Stomatitis. The Pediatric Infectious Disease Journal.2007;26(8).728-732.

18 Kadir AS, Islam AM, Ruhan M, Mowla A, Nipun JN. Recurrent aphthous stomatitis: An overview, International Journal of Oral Health Dentistry.2018;4(1):6-11.

19 Kramer IR, Pindborg JJ, Bezroukov V, Infirri JS. Guide to epidemiology and diagnosis of oral mucosal diseases and conditions. World Health Organization. Community Dent Oral Epidemiol. 1980 ;8(1):1-26.

INVESTIGATIONS[20]

- Serum Vitamin B12 and Folic acid status
- Serum Iron
- Blood glucose level
- Serum IgE level
- Oral biopsy, only in cases of uncertainty
- Serologic tests look for three antibodies common in celiac disease: Anti-tissue transglutaminase (TTG) antibodies, Endomysial antibodies (EMA), Deamidated gliadin peptide (DGP) antibodies
- Other specific investigations if any systemic disease is suspected

DIFFERENTIAL DIAGNOSIS[12,18]

Diagnosis	Differential features
Carcinoma	Painless ulcer with induration where the tissue feels firm and thickened with fixation and loss of mobility with the surface being nodular or ulcerated and the ulcer with raised/rolled margin. In the later stages there may be a soft fungating mass that bleeds readily
Leukoplakia	White patch, or plaque, that cannot be characterized clinically or pathologically as any other disease with variable appearance. Lesions may be white, whitish-yellow or grey and some appear homogeneous, while others are nodular, showing white areas intermingled with red zones; this is often called a nodular (speckled) leukoplakia
Leukoedema	Seen typically on the buccal mucosa and has been described as resembling an ill-defined 'grey veil' lying on the mucosa
Erythroplakia	Bright red velvety plaques which cannot be characterized clinically or pathologically as due to any other condition
Leukokeratosis nicotinapalati	Specific lesion may occur in the palate of heavy pipe and cigar smokers, particularly the former where the mucosa is reddened which soon becomes greyish-white and present with a wrinkled appearance
Lichen planus	Oral lesions are seen with or without skin lesions. Skin lesions are pruritic, purple, polygonal papules. Oral lesions occur in two forms: (a)*Reticular* with white striae form on both sides. (b) *Erosive* characterized by painful ulceration on the buccal mucosa, gingiva or lateral tongue
Herpangina	Coxsackie viral infection mostly affecting children, multiple small vesicles appear on the faucial pillars, tonsils, soft palate and uvula which rupture to form small ulcers
Herpetic gingivostomatitis	Caused by herpes simplex virus and is of two types: primary and secondary

20 Nair JR, Moots RJ. Behcet's disease. Clin Med (Lond). 2017 ;17(1):71-77.

Hand, foot and mouth disease	Viral infection affecting children. Oral lesions are seen on the palate, tongue and buccal mucosa
Vincent infection (Acute necrotizing ulcerative gingivitis)	Causative organisms are fusiform bacillus and spirochaete, Borrelia vincentii. It starts at the interdental papillae and then spreads to free margins of the gingivae which get covered with necrotic slough
Tuberculosis, syphilis and actinomycosis	May present as chronic ulcers. Diagnosis confirmed by specific tests.
Moniliasis (Candidiasis)	Caused by Candida albicans and occurs in two forms: 1.Thrush which appears as white grey patches on the oral mucosa and tongue. 2.Chronic hypertrophic candidiasis where the lesion appears as white patch which cannot be wiped off
Erythema multiforme	Disease of rapid onset involving the skin and mucous membranes, either of which may be involved alone
Pemphigus vulgaris	Autoimmune disorder with oral lesions is seen in 50% of the cases and may precede skin lesions
Benign mucous membrane pemphigoid (BMMP)	Autoimmune disorder and mucosal lesions involving cheek, gingivae and palate
Drug allergy	Systemic administration of drugs like penicillin, tetracycline, sulfa drugs, barbiturates, phenytoin, etc. may cause erosive, vesicular or bullous lesions in the oral cavity
Median rhomboid glossitis	It is a developmental anomaly seen as red rhomboid area, devoid of papillae, on the dorsum of tongue in front of foramen caecum
Geographical tongue	It is characterized by erythematous areas, devoid of papillae, surrounded by an irregular keratotic white outline

EVALUATION AND ASSESSMENT[21,22,23]

- Oral Health Impact Profile (OHIP-49)
- Geriatric Oral Health Assessment Index (GOHAI)
- Ulcer Severity Score (USS)

RED FLAGS[24]

- Persistence of ulcers more than 3 or 4 weeks
- Ulcers with raised border
- Ulcers which are deep and/or hard
- Persistent ulcers accompanied by lymph node enlargement
- Signs of dehydration in infants and children who are not able to eat/drink due to pain
- Ulcers in high-risk patients such as smokers and drinkers.

21 Locker D, Miller Y. Evaluation of Subjective Oral Health Status Indicators. J Public Health Dent .1994;54(3):167-76.
22 Slade GD. Derivation and validation of a short-form oral health impact profile. Community Dent Oral Epidemiol. 1997;25(4):284-290.
23 Tappuni AR, Kovacevic T, Shirlaw PJ, Challacombe SJ. Clinical assessment of disease severity in recurrent aphthous stomatitis. J Oral Pathol Med .2013;42(8): 635–641.
24 Plewa MC, Chatterjee K. Aphthous Stomatitis. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021. Available from: https://www.ncbi.nlm.nih.gov/books/NBK431059/

MANAGEMENT[25,26]

General management

Patient education is important to prevent recurrence of aphthous ulcerations.

- Practice good oral hygiene and avoid local trauma or oral hygiene products of known sensitivity
- Consider taking dietary supplements with iron, zinc, or vitamins B1, B2, B6, B12, or C if vitamin or mineral deficiency is identified
- Avoid hard foods (e.g., hard toasted bread), all types of nuts (walnuts, hazelnuts, etc.), chocolate, acid beverages or foods (fruits or citrus juices, tomato), salty foods, very spicy foods and alcoholic and carbonated beverages
- Only individuals diagnosed with celiac disease should choose a gluten-free diet
- Avoid known trigger foods, emotional or physiologic stress whenever possible
- Supportive care including rest
- Increased fluid intake
- Reassurance that aphthae are not communicable.

Homoeopathic management

Homoeopathic medicines have scope in treatment of aphthous stomatitis as per the research evidence.[27] Several medicines are given in homoeopathic repertories for aphthous stomatitis. In synthesis repertory[28], 204 medicines are found in chapter MOUTH under the rubric Aphthae. The frequently verified characteristic features of some organospecific remedies are***: Digitalis purpurea***: Roughness, excoriation and scraping in the mouth and throat, with clammy taste. ***Kalium chloricum***: Acute ulceration and follicular stomatitis, aphthous and gangrenous. Entire mucus membrane of mouth red, tumid, gray based ulcer. Profuse secretion of acrid saliva. Fetor. ***Sempervivum tectorum***: Tongue ulcerated bleeds easily, especially at night, much soreness of tongue with stabbing pains. ***Muriaticum acidum***: Tongue, pale, swollen, dry, leathery, paralyzed. Deep ulcers on tongue accompanied with low fevers and great prostration. ***Mercurius corrosivus***: Aphthae and ulcers with burning, scalding sensation in mouth. ***Hydrastis***: Ulceration of tongue, fissures toward the edges. ***Zincum metallicum***: Bloody taste. Blisters on tongue. ***Manganum aceticum***: Tongue sore and irritable with ulcers.

The following are few commonly prescribed homoeopathic medicines for aphthous stomatitis with their indications, enlisted from experiences, and textbooks.[29,30,31,32]

25 Dhingra PL, Dhingra S, Dhingra D. Diseases of Ear, Nose and Throat & Head and Neck Surgery. 6th Ed. Haryana: Elsevier;2014. Chapter 43, Common Disorders of Oral Cavity; p. 217-219

26 Belenguer-Guallar I, Jiménez-Soriano Y, Claramunt-Lozano A. Treatment of recurrent aphthous stomatitis. A literature review. J Clin Exp Dent. 2014;6(2): 168-74.

27 Mousavi F, Mojaver YN, Asadzadeh M, Mirzazadeh M. Homeopathic treatment of minor aphthous ulcer: a randomized, placebo-controlled clinical trial. Homeopathy. 2009;98(3):137-141.

28 Schroyens F. Synthesis Repertory ver. 9.1; New Delhi: B Jain Publishers Pvt. Ltd.; 2002:307-08.

29 Allen HC. Allen's keynotes Rearranged and classified with leading remedies of the materia medica and bowel nosodes.8th ed. New Delhi: B. Jain Publishers (P) Ltd.;1997.

30 Boericke W. Boericke's New Manual of Homoeopathic Materia Medica with Repertory.9th Ed. New Delhi: B. Jain Publishers; 2007.

31 Clarke JH. A Dictionary of Practical Materia Medica. 7th ed. New Delhi: B. Jain Publishers;2000.

32 Kent JT. Repertory of the Homoeopathic Materia Medica.6th American edition. New Delhi: Jain publishing co.;1978.

Medicines	General indications	Characteristic particulars
Aethusa cynapium	*Complains of children during dentition and summer. Hot patient, weak, exhausted, thirstless with cold and clammy skin, intolerance to milk; restless, anxious, incessant crying; idiocy*	• Dry aphthae • Tongue seems too long • Burning pustules in throat, with difficult swallowing • Worse during evenings, warmth, summer • Better in open air and company
Arsenicum album	*Chilly patient; rapid disproportionate prostration; burning pains better by heat (except headache); cadaveric odour of discharges and body; anxiety, anguish, fear of death and restlessness*	• Tongue dry, clean, and red; stitching and burning pain in tongue; ulcerated with blue color, dryness and burning heat • Bloody saliva, metallic taste and gulping up of burning water • Fetor oris; taste bitter to water; sour, foul, saltish and sweetish taste in morning • Worse after midnight, from cold, cold drinks, or food, right side • Better from heat, from warm drinks
Borax veneta	*Poorly nourished babies; dread of downward motion in nearly all complaints; nervous, frightened, sensitive to sudden noises, cries out of sleep as if frightened, awakes suddenly dreaming and grasping sides of bed without apparent cause*	• Aphthae in the mouth, on the tongue, inside of the cheek; easily bleeding when eating or touched; prevents child from nursing; with hot mouth, dryness and thirst • Cracked and bleeding tongue, salivation, especially during dentition • Aphthous sore mouth; of old people • Taste bitter, even saliva; Thrush • Worse from smoking, touch, eating salty or sour food, after menses • Better by pressure
Carbo vegetabilis	*Chilly patient; disintegration and imperfect oxidation is the keynote of the remedy; Weak digestion, simplest food disagrees, eructation gives temporary relief; patient may be almost lifeless, but head is hot; coldness, breath cool, pulse imperceptible; oppressed and quickened respiration, and must have air, must be fanned hard very closely many complaints. Persons who have never fully recovered from the effects of some previous illness. Aversion to darkness. Fear of ghosts. Sudden loss of memory*	• Aphthae; bluish, blackish ulcers, with burning • Excoriation of the tongue, with difficulty in moving it • Tongue coated white or yellow brown, covered with aphthae • Dryness and roughness of the mouth, without thirst • Scorbutic gums. Taste bitter, sour. Increased saliva. Sore aphthous in the throat • Worse in evening, at night and open air, cold, from fat food, butter, coffee, milk, wine • Better from eructation, cold

Medicines	General indications	Characteristic particulars
Hepar sulphuricum	*Extremely chilly patient; hypersensitive (to cold, pain), faints easily; scrawny glandular constitution; profuse sweat Irritable; difficult to please, slow to act*	• Aphthous pustules inside lips and cheeks • Ulcers of soft palate affecting uvula • Gums and mouth painful to touch and bleed readily • Tip of tongue very painful and sore. Offensive breath. • Worse from touch, lying on painful side • Better from warmth, after eating
Iodium	*Rapid metabolism, loss of flesh, increased appetite; great debility, the slightest effort induces perspiration; worse when quiet, in warm room, right side; better after eating*	• Foul ulcers and profuse, fetid soapy ptyalism • Tongue thickly coated with offensive odor from mouth • Metallic taste • Better in open air
Kalium bichromicum	*Chilly patient, susceptible to cold; fat, chubby, short necked with shifting pains. Aversion and intolerance to meat, desires sour things. Worse from cold, open air, hot weather. Better from heat*	• Aphthous ulcers deeply corroding • Dry mouth better by drinking cold water; viscid saliva, sticky mouth • Tongue mapped, red, shining, smooth, and dry, with dysentery; broad, flat, indented, thickly coated • Feeling of a hair on tongue • Worse from beer, during morning
Kaliumcarbonicum	*Chilly patient; puffiness, weakness, backache and profuse perspiration; worse in morning, 2 to 4 a.m; excessive flatulence; distended stomach as if it would burst*	• Burning soreness or painful pimples on tip of the tongue • Pus oozes out, aphthae • Tongue white. Much saliva constantly in mouth • Bad, slimy taste • Worse in cold weather, from soup and coffee, lying on left and painful side • Better in warm weather, though moist, during day, while moving about
Kalium muriaticum	*Chilly patient, catarrhal condition, milky white, viscid, sticky, thick, slimy or lumpy discharges. Stubborn infiltration. Better by cold drinks*	• Aphthae. Thrush. White ulcers in the mouth • Tongue, mapped, gray or white at base • Taste: salty, bitter with coldness of tongue • Worse from rich food, fats, motion
Kreosotum	*Chilly patient; old looking, wrinkled; lean, poorly nourished; rapid emaciation; glandular affinity; hemorrhagic diathesis; Excoriating, burning and offensive discharges; irritable, dissatisfied, cross, peevish, music causes weeping*	• Aphthae and salivation during pregnancy • Lips red, bleeding • Taste bitter low down in the throat. Foul breath • Worse in open air, cold, rest, when lying, after menstruation • Better from warmth, motion, warm diet

Medicines	General indications	Characteristic particulars
Lachesis mutus	*Hot patient; thin and emaciated; hemorrhagic diathesis; great sensitiveness to touch; hot flushes and perspiration. Desires oysters, alcohol, farinaceous food, all complaints worse after sleep; loquacious, jumps from one idea to another, jealous, suspicious, indolent*	• Aphthous and denuded spots with burning pain and rawness, mapped tongue • Gums swollen, spongy, bleed • Tongue swollen, burns, trembles, red, dry and cracked at tip, catches on teeth • Nauseous taste. Much thick, pasty saliva • Worse on left side, in the spring, hot drinks • Better from warm applications
Lycopodium clavatum	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4 to 8 pm; right-sided complaints or symptoms shift from right to left; desire for warm foods and drinks, sweet; dominating, cranky, lack of self-confidence, precocious*	• Mouth waters. Blisters on tongue. Bad odor from mouth • Tongue dry without thirst, black, cracked, swollen; oscillates to and fro • Worse from heat or warm room, hot air, bed • Better from warm food and drink, on getting cold, from being uncovered
Mercurius solubilis	*Sensitive to changes of temperature. Profuse offensive perspiration. Tongue flabby with imprint of teeth. Increased salivation. Increased thirst for large quantity of water. Worse at night, in wet damp weather*	• Tongue heavy, thick, indented, moist coating; yellow, flabby, feels as if burnt, with ulcers • Stomatitis from taking chewing gum • Fetid odor from mouth, can smell it all over room • Great thirst, with moist mouth • Taste sweetish, bread tastes sweet • Worse in warm room
Nitricum acidum	*Chilly patient; takes cold easily; thin built; sickly; desires fat, craving for lime, slate, pencil, papers and charcoal and salt; disposed to diarrhea; strong smelling urine; headstrong, irritable, fearful, vindictive*	• Bleeding of gums • Painful pimples on sides of tongue • Tongue clean, red and wet with center furrowed • Salivation and fetor oris. Bloody saliva • Worse in evening and at night, cold climate, hot weather • Better while riding in carriage

Medicines	General indications	Characteristic particulars
Staphysagria	*Sickly, tired, sensitive subjects; Bottled up emotions. Always angry. Easily offended, apathetic indifferent. Nervous affections with marked irritability, diseases of the genito-urinary tract and skin. Worse from anger, indignation, grief, mortification, loss of fluids, onanism, sexual excesses, tobacco; least touch on affected parts. Better after breakfast, warmth, rest at night*	• Stomatitis, thrush • Salivation, spongy gums, bleed easily • Sub-maxillary glands swollen
Sulphuricum acidum	*Chilly patient; right-sided complaints; pain appears and disappears suddenly; remedy for chronic alcoholism; craving for brandy and alcohol; cannot drink water until mixed with alcohol; alcoholic dyspepsia; hurried tendency; dissatisfied, peevish*	• Aphthae; gums bleed readily • Aphthous mouth of infant or mother with yellowish or whitish ulcers; vesicle and rapidly spreading ulcers in mouth • Sore mouth • Bleeding from mucous surfaces of mouth and gums. Bloody saliva from mouth • Worse from excess of heat or cold in forenoon and evening • Better from warmth, lying on affected side
Sulphur	*Hot patient, kicks off cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child walks and sits stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve*	• Vesicles, blisters, and aphthae in mouth and on tongue, sometimes with burning pain, or with excoriating pain, when eating. • Exfoliation of mucous membrane of mouth. • Lips dry, bright red with burning pain • Worse at rest, warmth in bed, washing, in morning, night, from alcoholic stimulants, periodically • Better in dry, warm weather, lying on right side

ALGORITHM OF TREATMENT PROCESS FOR APHTHOUS STOMATITIS

Patients presents with:

- Burning or prickling for a short period before the ulcers appear
- Minor aphthae cause single lesions or up to 5 concurrent ulcers may occur. These are usually confined to the non-keratinized parts of the mucosa and therefore, do not involve hard palate or gingiva
- Major apthous lesions cause substantial pain associated with fever, dysphagia, and malaise. These lesions are deeper, larger and last longer. They have a predilection for the posterior part of the mouth, particularly the soft palate and pharyngeal wall or tonsillar fauces
- The herpetiform type occurs on mobile mucosa and not on attached mucosa like a true herpes infection. The ulcers may number 50 or more, and although each individual ulcer rarely exceeds 2 mm in diameter, groups of ulcers may coalesce to form compound ulcers with irregular outlines

Proper case history and physical examination

General management

- Practice good oral hygiene
- Avoidance of local trauma or oral hygiene products of known sensitivity
- Nutritional supplements such as Vitamin B-12 capsules, vitamin D capsules, folate tablets, or zinc tablets for patients with RAS who have deficiency of vitamins and minerals
- Avoid known trigger foods, emotional or physiologic stress whenever possible
- Suggested supportive care includes rest
- Increas fluid intake

Appropriate homoeopathic prescription according to the symptom similarity. Acute disease is to be treated with acute medicine and regular follow up and change of medicine if no improvement in condition

Improvement

Yes

NO

Reassess the case and prescribe appropriate homoeopathic medicine

Improvement

Yes

Check for complete resolution

If resolution is incomplete

If resolution is complete

No

Reassess the case and give appropriate homoeopathic medicine

In asymptomatic phase, give constitutional treatment to avoid recurrence and follow up as per need of patient. Advise patient to revisit if acute phase recurs

Consider for standard care /integrative care

RED FLAGS

- Persistence of ulcers more than 3 or 4 weeks
- Ulcers with raised border
- Ulcers which are deep and/or hard
- Persistent ulcers accompanied by lymph node enlargement
- Signs of dehydration
- Ulcers in high-risk patients such as smokers and drinkers.

CHAPTER 5

ATOPIC DERMATITIS

ATOPIC DERMATITIS

CASE DEFINITION[1]

Atopic dermatitis (AD) is a chronic, recurrent inflammatory skin disease, commonly having a childhood onset and characterised by variably distributed pruritic eczematous lesions with flexural predilection; mostly exhibited by patients with personal or family history of atopic diathesis [(i) personal or family history of bronchial asthma, allergic rhinitis and conjunctivitis and/or atopic dermatitis and /or (ii) predisposition to overproduction of immunoglobulin E (Ig E) antibodies].

Synonyms- Atopic dermatitis is sometimes called eczema, a term that also refers to a larger group of skin conditions. Other names include "infantile eczema", "flexural eczema", "prurigo besnier", "allergic eczema", and "neurodermatitis".[2,3,4,5]

INCIDENCE/PREVALENCE[6,7,8]

AD affects 1%-20% of people worldwide. The clinical presentation often varies with age. AD is seen in 3% of all infants, begins between 3 and 6 months of age. 50% of all those with AD present within their first year of life and probably 85% present it by 5 years of age. Early childhood AD often predisposes a child to later develop asthma and/or allergic rhinitis (hay fever).

The prevalence of AD in adults is about 1%-3%, and 10%-20% in children. Since 1960s, the prevalence of AD has increased more than 3-fold. Its prevalence is lower in developing countries than industrialized nations (2-3 fold). It affects about one-fifth of all individuals during their lifetime.

ETIOLOGY AND PATHOGENESIS[9,10,11]

The etiology of AD is multifactorial and complex which is not completely understood. The factors which play key roles in the development of atopic dermatitis are – genetic factor, impaired immune response, defect in skin barrier including the role of filaggrin (FLG), environmental exposures, and other eliciting and exacerbation factors.

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4 Brown S, Reynolds NJ. Atopic and non-atopic eczema. BMJ. 2006;332 (7541):584-88.
5 Darsow U, Lübbe J, Taïeb A, Seidenari S, Wollenberg A, Calza AM, Giusti F, Ring J. European Task Force on Atopic Dermatitis. Position paper on the diagnosis and treatment of atopic dermatitis. J Eur Acad Dermatol Venereol. 2005; 19 (3):286-95.
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7 Sehgal VN, Khurana A, Mendiratta V, Saxena D, Srivastava G, Aggarwal AK. Atopic dermatitis; Etio-pathogenesis, An overview. Indian J Dermatol. 2015;60 (4): 327-31.
8 Rajka G. Essential Aspects of Atopic Dermatitis. Berlin, Germany: Springer Verlag; 1989: 125-38.
9 Ogg G. Role of T cells in the pathogenesis of atopic dermatitis. Clin Exp Allergy. 2009; 39(3):310–6.
10 Mittermann I, Aichberger KJ, Bünder R, Mothes N, Renz H, Valenta R. Autoimmunity and Atopic Dermatitis. Current Opinion in Allergy and Clinical Immunology.2004; 4 (5): 367-371.
11 McPherson T. Current Understanding in Pathogenesis of Atopic Dermatitis. Indian J Dermatol. 2016;61(6):649-655.

- **Genetic factor**

  There is a clear genetic predisposition and is an important risk factor in atopic dermatitis. The child is at increased risk to develop atopy, if either parent is affected and with the severity of the complaint.

- **Impaired immunological response (Immunological changes)**

  The immunological response of patients includes key roles of T cells, dendritic cells, innate lymphoid cells, mast cells, and eosinophils. There are abnormalities in both adaptive and innate immunity in children with AD.

- **Environmental factors and microbial exposure**

  Environmental factors, in addition to genetic factors, are the main drivers of change in disease burden. Factors such as climate, urban versus rural setting, diet, breast feeding and time of weaning, obesity and physical exercise or tobacco smoke and pollution etc. are implicated as main predisposing factors. Even emotional stress may exacerbate the symptoms.

- **Emotional issues and their impact**

  It is well established that emotional stressors and anxiety make the symptoms worse or trigger the AD in an individual.[12]

DIAGNOSIS

Clinical presentation[13]

- Pruritus and scratching, pruritus being the hallmark of atopic dermatitis. Itching often precedes the appearance of lesions; hence the concept that atopic dermatitis is "the itch that rashes."
- Course is marked by exacerbations and remissions.
- Eczematous dermatitis (acute, subacute, or chronic) with typical morphology and age-specific patterns.
- Personal or family history of atopy (allergic rhinitis, asthma, food allergies or eczema).
- Clinical course lasting longer than six weeks.
- Atopic dermatitis can be divided into three stages:
  - Infantile atopic dermatitis, occurring from 2 months to 2 years of age
  - Childhood atopic dermatitis, from 2 to 10 years
  - Adolescent and adult stage of atopic dermatitis

12 Suárez AL, Feramisco JD, Koo J, Steinhoff M. Psychoneuroimmunology of psychological stress and atopic dermatitis: pathophysiologic and therapeutic updates. Acta Derm Venereol. 2012;92(1):7-15.

13 Khanna N. Illustrated Synopsis of Dermatology & Sexually Transmitted Diseases.4th ed. New Delhi: Elsevier;2011.

Three distinct patterns of AD as mentioned below have been recognized, depending on the age of the patient:

Infantile phase (Birth to 2 years of age)	Childhood phase (2 years of age to puberty)	Adult phase
• Begins after the age of 3 months • Lesions are intensely itchy including papules and vesicles, which soon become exudative • Lesions begin on face but can involve rest of the body, but usually diaper area is spared • Secondary infection is common • Runs a chronic course: o In 40% of infants, lesions clear by the age of 18 months. o In 60%, pattern changes into childhood pattern.	• Dry, leathery, and extremely itchy plaques • Mainly on the elbow and knee flexors. Sometimes a reverse (extensor) pattern may be seen	• Intensely very itchy, lichenified plaques • Cubital and popliteal fossae and sometimes on the neck. A low-grade involvement may be seen on the rest of the body, e.g. lick dermatitis • Discoid pattern of eczema may be seen on the hands and feet

Diagnostic Criteria[14,15,16]

The diagnosis of AD is mainly clinical based on signs and symptoms alone with very few laboratory tests available for confirmation. Different forms of criteria are developed to aid in diagnosis, one of which is mentioned below:

UK diagnostic criteria

The diagnostic criteria based on the work of Hanifin and Rajka are useful in classifying cases. It is classified as major and minor.

Major criteria (3 or more)	Minor criteria (3 or more)
• Presence of an itchy skin condition or evidence of rubbing or scratching, plus three or more of the following: o Onset below 2 years (not used if child is under 4 years) o History of skin crease involvement (including cheeks) in children under 10 years	• Xerosis (dry skin) • Ichthyosis / hyperlinear palms/ keratosis pilaris • IgE reactivity /Elevated serum IgE (Immediate skin test reactivity, Radio allegro sorbent test (RAST) positive • Early age of onset. Tendency for cutaneous infections (especially S. aureus and Herpes simplex virus) • Tendency to non-specific hand/foot dermatitis

14 Eichenfield LF, Tom WL, Chamlin SL, Feldman SR, Hanifin JM, Simpson EL, et al. "Guidelines of care for the management of atopic dermatitis: section 1. Diagnosis and assessment of atopic dermatitis". Journal of the American Academy of Academy Dermatology. 2014; 70 (2):338 – 51.

15 Brenninkmeijer EE, Schram ME, Leeflang MM, Bos JD, Spuls PI. Diagnostic criteria for atopic dermatitis: a systematic review". The British Journal of Dermatology. 2018; 158 (4):754–65.

16 Williams HC, Burney PG, Pembroke AC, Hay RJ. "The U.K. Working Party's Diagnostic Criteria for Atopic Dermatitis. III. Independent hospital validation". The British Journal of Dermatology.1994.131(3):406–16.

○ History of a generally dry skin ○ Personal history of other atopic disease. (Or history of any atopic disease in a first degree relative in children under 4 years) ○ Visible flexural dermatitis (or dermatitis of cheeks/ forehead and outer limbs in children under 4 years)	• Nipple eczema • Cheilitis • Recurrent conjunctivitis • Itching when sweating • Dennie-Morgan infra-orbital fold (an infra-orbital fold is a fold or line in the skin below the lower eyelid) • Keratoconus • Anterior subcapsular cataracts • Orbital darkening • Facial pallor/ facial erythema • Pityriasis alba • Itching when sweating • Intolerance to wool and lipid solvents • Perifollicular accentuation • Food hypersensitivity course influenced by environmental and/or emotional factors • White dermographism or delayed blanch to cholinergic agents

INVESTIGATIONS[13,17]

- IgE levels: Elevated total serum IgE (normal: <200IU/ml) and IgE antibodies specific to antigens may be useful in diagnosing atopic state
- Eosinophil counts: Increased eosinophil may be present

DIFFERENTIAL DIAGNOSIS[18,19,20]

The differential diagnosis of AD in children and adults includes non-atopic dermatitis, seborrheic dermatitis, allergic contact dermatitis, nummular dermatitis, psoriasis (palmoplantar), palmoplantar pustulosis, scabies, lichen simplex chronicus, chronic actinic dermatitis, dermatophytosis, dermatomyositis, pemphigus foliaceus, cutaneous T-cell lymphoma.

Typical atopic dermatitis is not difficult to diagnose because of its predilection for symmetric involvement of face, neck, ante-cubital and popliteal fossae.

17 Vanecova J, Bukac J. The severity of atopic dermatitis and the relation to the level of total IgE, onset of atopic dermatitis and family history about atopy. Food and Agricultural Immunology. 2016; 27(5): 734-741.
18 Brenninkmeijer EEA, Spuls PI, Legierse CM, Lindeboom R, Smitt JHS, Bos JD. Clinical differences between atopic and atopiform dermatitis. J Am Acad Dermatol. 2008;58(3):407-14.
19 Novak N,Bieber T. Allergic and nonallergic forms of atopic diseases. J Allergy Clin Immunol.2003;112(2):252-62.
20 Charman C, Williams H. Outcome measures of disease severity in atopic eczema. Arch Dermatol. 2000;136(6):763-9.

Conditions	Differentiating signs & symptoms
Non-atopic dermatitis	• Symptoms are same of AD; females are more affected • A low level of total IgE, negative skin prick tests, and undetectable specific IgE antibodies • Atopic family history rarely found but there is no family history of atopic diseases
Infantile Seborrheic dermatitis	• Onset during 1st days or weeks of life, absence of pruritus, and presence of greasy scaling on a yellow-red base; top of the scalp, axilla, and diaper area are involved • Atypical, seborrheic areas often not excoriated and not pruritic, no whitish dermographism • IgE level is usually normal; no Eosinophilia; food allergy and respiratory allergy conditions rare
Irritant or allergic contact dermatitis	• Localized rash or irritation of the skin results from either exposure to allergens (allergic contact dermatitis) or irritants (irritant contact dermatitis) • Many substances can cause such reactions, including soaps, cosmetics, fragrances, jewellery and plants. Only the superficial regions of the skin (epidermis and the outer dermis) are affected • Red, itchy rashes, burning pain; occurs at any age, mostly in adults; typical morphology and localised distribution, pruritic, often excoriated caused by direct contact with a substance or an allergic reaction to it • Irritant dermatitis is usually confined to the area where the trigger touches the skin and more painful than itchy, whereas allergic dermatitis may be more widespread on the skin and more itching often itches. IgE level is usually normal. Positive patch test
Nummular dermatitis	• A chronic condition that causes coin-shaped spots on the skin; often itchy with burning pain and well-defined; brown, pink, or red; may ooze clear fluid or become dry and crusty; may have a personal or family history of allergies, asthma, or atopic dermatitis and may result in one patch or multiple patches of coin-shaped lesions • Lasts for several months; not contagious; the skin may be red, scaly, or inflamed around the lesions
Palmoplantar Pustulosis	• A rare autoimmune chronic skin condition; smokers are more affected; firstly, red and tender then blisters and pustules form on palms of hands and soles of feet • Can start as a small area and spread; common for them to come and go; white or yellow pus in the pustules; after drying up, they can turn brown, thick and scaly; deep and painful cracks on skin causes difficulty to walk or perform other activities

Conditions	Differentiating signs & symptoms
Psoriasis (Palmoplantar)	• An autoimmune condition that can flare up with exposure to certain triggers and often comes and goes; appear almost anywhere on the body, including the hands and feet; causes cells to build up rapidly on the surface skin and the extra skin cells form scales and red patches that are itchy and sometimes painful • Palmoplantar psoriasis affects palms of hands and the soles of feet characterized by well-defined areas of raised, thickened skin, redness and scaling with itching and burning sensation, sometimes pain, cracking and bleeding; remission and then a flare cause by certain triggers
Scabies	• A contagious skin infestation by the mite Sarcoptes scabiei affecting in young children more; highly pruritic, erythematous papular lesions; present across most of the body or certain areas such as wrists, between fingers, or along the waistline; typical burrows on the flexor wrists, finger webs and genitalia; severe itching worse at night. Similar symptoms in other family members • There is an enhanced susceptibility to infection with Sarcoptes scabiei in atopic patients; spread of infection may occur during brief contact or by contaminated objects
Lichen simplex chronicus (Neurodermatitis)	• More common in age group of 35 and 50 years and in women this skin disorder characterized by chronic itching and constant scratching causes thick, leathery, darkened, lichenified skin • Associated with many factors, including the scratch-itch cycle, psychological stressors, and atopy; intense recurrent itching that disrupts the quality of life
Chronic actinic dermatitis (Photosensitivity dermatoses)	• A persistent photosensitivity disorder in which patients respond abnormally to Ultraviolet rays A and B (UVA, UVB), and sometimes to visible irradiation; skin lesions develop a few hours to several days after sun exposure • Pruritic, thick, lichenified photo distributed plaques; Initially, patchy erythema accompanied by pruritus and then distinct lesions develop; upper chest, upper arms, backs of the hands, thighs, and sides of the face are primarily affected • Skin lesions resolve spontaneously within several days of ceasing sun exposure and do not leave behind any traces
Dermatomyositis	• An immune-mediated disease of the muscles and connective tissues; more common in females; Discoloration of eyelids, heliotrope rash, often with periorbital oedema, and erythematous papules over knuckles, elbows, knees, and upper chest and back; lesions are frequently photosensitive • May be present with dilated nail-fold capillary loops at the base of the fingernails; associated with an increased risk of cancer • Although proximal and symmetrical muscle weakness is typical, myositis-specific auto antibodies such as Anti-Jo-1, anti-SRP and anti-Mi-2 present as antinuclear antibodies, increased levels of immunoglobulins • It may exist without inflammatory myopathy (amyopathic dermatomyositis)

Conditions	Differentiating signs & symptoms
Dermatophytosis (Ringworm)	• It is a fungal infection of the skin; symptoms begin 4-14 days after exposure; a red, itchy, scaly, circular rash or raised patches which may be more red on outside edges or resemble a ring; hair loss in the affected area; multiple areas can be affected at a given time. Infection on the skin of the feet may cause athlete's foot and in the groin, jock itch and in the nails, onychomycosis • Fungi thrive in moist, warm areas, such as locker rooms, tanning beds, swimming pools, and skin folds • Diagnosis is often based on the appearance and symptoms and confirmed by either culturing or skin scraping under a microscope
Pemphigus foliaceus	• An acquired superficial blistering skin disease; intact bullae are rarely found; skin lesions that are often distributed in seborrheic areas can mimic acute/ subacute eczema; body's immune system produces immunoglobulin G (IgG) autoantibodies that target the intercellular adhesion glycoprotein desmoglein-1 (dsg-1)

EVALUATION AND ASSESSMENT[21,22,23,24]

Following measurement scales are used for assessing the severity and outcome of atopic dermatitis:

- Severity Scoring of Atopic Dermatitis (SCORAD)
- The Rajka and Langeland scoring system
- The Six-Area, Six-Sign Atopic Dermatitis (SASSAD)
- The Atopic Dermatitis Area and Severity Index (ADASI)
- The Eczema Area and Severity Index (EASI)
- The Basic Clinical Scoring System (BCSS)
- The Atopic Dermatitis Severity Index (ADSI)
- Children's Dermatology Life Quality Index (CDLQI)
- Dermatitis Family Impact (DFI)
- Infants' Dermatitis Quality of Life Index (IDQOL)

COMPLICATIONS/RED FLAGS

- Bacterial skin infections
- Eczema herpeticum
- Asthma and fever
- Sleep disturbance due to itching
- Poor self-confidence

21 Streiner DL, Norman GR. Health Measurement Scales: A Practical Guide to Their Development and Use. 2nd ed. New York: Oxford University Press;1995.
22 Finlay AY. Measurement of disease activity and outcome in atopic dermatitis. Br J Dermatol. 1996;135 (4):509-15.
23 Finlay AY. Quality of life assessments in dermatology. Semin Cutan Med Surg.1998;17(4):291–96.
24 McKenna SP, Doward LC. Quality of life of children with atopic dermatitis and their families. Curr Opin Allergy Clin Immunol. 2008; 8 (3): 228–31.

MANAGEMENT

General management

AD adversely affects social interactions and personal relationships. Notably, pruritus can be intractable and lead to significant emotional distress and sleep loss. Therefore, treatments for AD need to rapidly control symptoms of the disease and improve quality of life. Given the chronic and relapsing nature of the disease, its general management should focus on the following strategies:

- Identification and avoidance of triggering and/or aggravating factors that exacerbate itching, such as woollen clothes, emotional stress, and uncomfortable climatic conditions.
- Emotional stress, anxiety and depression can provoke itching, and scratching exacerbates AD. Such patients with emotional or psychological problems should asked to relax.
- Psychological support and counselling can be helpful to break the itch-scratch cycle, especially in adolescents and young adults.

Due to limited understanding of the etiopathology of childhood prevalence of AD, the prevention is focused on the management of both predisposing and exacerbating risk factors.[25,26]

Homoeopathic management

Homoeopathy medicines can offer practical benefit in the treatment of AD.[27,28,29,30,31,32,33,34,35] Several clinical research studies and case studies[36,37,38,39] have shown that homoeopathic treatment has a positive therapeutic effect in AD with improvement in the health-related quality of life of such patients.

25 Flohr C. Recent perspectives on the global epidemiology of childhood eczema. Allergol Immunopathol (Madr). 2011;39 (3):174–82.
26 Flohr C, Nagel G, Weinmayr G, Kleiner A, Strachan DP, Williams HC. Lack of evidence for a protective effect of prolonged breastfeeding on childhood eczema: lessons from the International Study of Asthma and Allergies in Childhood (ISAAC) Phase Two. Br J Dermatol. 2011;165 (6):1280–89.
27 Rossi E, Bartoli P, Bianchi A, Da Frè M. Homeopathy in paediatric atopic diseases: long-term results in children with atopic dermatitis. Homeopathy. 2012;101(1):13-20.
28 Jose MM, Pedrera-Zamorano JD. Statistical comments on Homeopathy in paediatric atopic diseases: long-term results in children with atopic dermatitis. Homeopathy. 2016; 105 (4): 356.
29 Hughes R, Ward D, Tobin AM, Keegan K, Kirby B. The use of alternative medicine in pediatric patients with atopic dermatitis. Pediatr Dermatol. 2007;24 (2):118–120.
30 Siebenwirth J, Lüdtke R, Remy W, Rakoski J, Borelli S, Ring J. Effectiveness of a classical homeopathic treatment in atopic eczema. A randomised placebo-controlled double-blind clinical trial. Forsch Komplemented. 2009;16(5):315-23.
31 Witt CM, Brinkhaus B, Pach D, Reinhold T, Wruck K, Roll S, Jackel T, Staab, D, Wegscheider K, Willich SN. Homoeopathic versus Conventional Therapy for Atopic Eczema in Children: Medical and Economic Results. Dermatology. 2009; 219 (4): 329–40.
32 Roll S, Reinhold T, Pach D, Brinkhaus B, Icke K, Staab D, Jäckel T, Wegscheider K, Willich SN, Witt CM. Comparative effectiveness of homoeopathic vs. conventional therapy in usual care of atopic eczema in children: long-term medical and economic outcomes. PLoS One.2013;8(1):54973.
33 Keil T, Witt CM, Roll S, Vance W, Weber K, Wegscheider K, Willich SN. (2008) Homoeopathic versus conventional treatment of children with eczema: A comparative cohort study. Complement Ther Med.2008 ;16(1):15–21.
34 Schäfer T, Riehle A, Wichmann HE, Ring J. Alternative medicine in allergies - prevalence, patterns of use, and costs. Allergy. 2002; 57 (8):694–700.
35 Becker-Witt C, Lüdtke R, Weisshuhn TER, Willich SN.Diagnoses and treatment in homeopathic medical practice. Forsch Komplementärmed Klass Naturheilkd. 2004;11 (2):98–103.
36 Witt CM, Lüdtke R, Willich SN. Homeopathic treatment of children with atopic eczema: A prospective observational study with Two years follow-up. Acta Derm Venereol. 2009; 89 (2): 182–83.
37 Eizayaga JE, Eizayaga JI; Prospective observational study of 42 patients with atopic dermatitis treated with homeopathic medicines. Homeopathy. 2012.101(1):21-7.
38 Parveen S. Homoeopathic treatment in a case of co-morbid atopic dermatitis and depressive disorder.Indian J Res Homoeopathy.2016 ;10 (1): 75-82.
39 Nwabudike CL. Atopic Dermatitis and Homeopathy. Our Dermatol Online. 2012; 3 (3): 217-20.

There are about 183 medicines mentioned in Synthesis repertory[40] under rubric "Eczema-atopic" in Skin chapter. Out of 183 medicines, three medicines (*Graphites, Rhus toxicodendron* and *Sulphur*) are in 1st grade and 26 in 2nd grade. AD is an illness with varying locations, varying states and stages of pathology with different rates of progress showing predominant skin symptoms. In this condition, different factors like age, occupation, previous illnesses and life circumstance unique to the individual patient are taken into consideration by constructing the totality of symptoms.

As per homoeopathic concept of diseases, AD is a psoric or pseudo-psoric disease and its treatment plan differs considerably in acute and chronic cases. The miasmatic load can move to sycotic with consequential thickening of lesions; could also move to tubercular if one observes repeated secondary bacterial infections. Chronic cases require comparatively longer period of treatment by the indicated constitutional medicines. Several changes in plan of treatment may be necessary before complete alleviation of symptoms.[41,42]

A particular difficulty is posed in patients of AD who are on suppressive medication, either local ointments or oral medication. Advise to cease this medication may result in a sudden flare up of itching and other manifestations. This may need some remedies selected based on the presenting symptoms to take care of the distressing symptoms before moving on to the constitutional, deep-acting remedy.

The frequently verified characteristic features of some organospecific remedies are: ***Arsenicum iodatum****:* Chilly, cannot endure cold, debilitating night-sweats, eczema of the beard; watery, oozing, itching; worse, washing. The discharge may be fetid, watery, and the mucous membrane is always red, angry, swollen; itches and burns. Dry, scaly, itchy. Marked exfoliation of skin in the form large scales*.* ***Calcarea sulph*urica:** Purulent exudations in or upon the skin. Skin affections with yellowish scabs. Many little matterless pimples under the hair, bleeding when scratched. Dry eczema in children. ***Cicuta virosa****:* Eczema; no itching, exudation forms into a hard, lemon-colored crust with burning pain. Elevated eruptions, as large as peas. Suppressed eruption causes brain disease. Worse, from touch everything appears strange and terrible. Confounds present with the past; desire for unnatural things, like coal*.* ***Caladium seguinum****:* The skin has a rough, dry feeling Itching, burning rash (forearm and chest), alternating with asthma. Violent itching on various parts*.* ***Croton tiglium****:* Pure idiopathic eczema, such as usually appears in children. Eczema over whole body to soles of feet, face and genitalia intense itching; stinging, smarting pains but scratching is painful. Vesicles; confluent oozing, exuding offensive moisture., worse by very gentle scratching. ***Manganum aceticum***: Chronic eczema associated with amenorrhoea worse at menstrual period, menopause. ***Pix liquida***: Cracked skin; itching intolerably, bleeds on scratching, eruptions on back of hand. ***Vinca minor***: Great sensitiveness of skin, with redness and soreness from slight rubbing; eczema of head and face, pustules itching, burning and offensive odor, matting hair together, plica

40 Schroyens F. The Essential Synthesis. Indian Edition. New Delhi: B. Jain Publishers(P) Ltd; 2012.
41 Hahnemann S. Organon of Medicine. Combined Fifth & Sixth Edition. Dudgeon Re and Boericke W (Translators). New Delhi: B. Jain Publishers (P) Ltd; 1921.
42 Kent JT. Lectures on Homoeopathic Philosophy. Reprint edition. New delhi: B. Jain Publishers(P) Ltd.; 2013.

polonica. ***Jugulans cineria*:** Pustules. Eczema, especially on lower extremities, sacrum and hands. Erythema and erysipelatous redness. ***Kalium arsenicum.***: Intolerable itching, worse undressing. Dry, scaly, wilted. Acne; pustules worse during menses. Chronic eczema; itching worse from warmth, walking, undressing. ***Sulphur iodatum***: Obstinate skin affections, notably in barber's itch and acne. Weeping eczema. ***Viola tricolor***: Eczema impetigonoides of the face, Intolerable itching, eruptions, particularly over face and head, with burning, itching; worse at night. Thick scabs, which crack and exude a tenacious yellow pus.

The commonly prescribed constitutional homoeopathic medicines[43,44,45,46,47] along with their indications are as follows:

Medicines	General indications	Characteristic particulars
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; walks and sit stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve; Morning diarrhoea, painless, drives out of bed*	• Troubles of very long standing resulting from suppressed skin eruptions after local medication • Eczematous eruptions excoriated, especially in folds, eruption, pustules, rhagades, rough, scaly, and scabby, unhealthy with dreadful itching at night; scratching relieves, "feels so good to scratch" scratching followed by bleeding and burning • Dry scaly eruptions with easy suppuration • Formication over skin of whole body • Worse after waking, morning, from warmth of bed, washing, evening, in damp weather often recurs in springtime, scratching and warmth of the bed, damp weather • Better in dry, warm weather
Sepia	*Chilly patient; tall, thin built with yellow saddle across upper part of cheeks and nose, big belly; dry flabby skin. Predisposed to take cold at change of weather. Irregular menses. Desire for sour food which aggravates. Cheerful, active when well but indifferent and quarrelsome when sick, self-absorbed, sad, weeping and indolent*	• Eczematous eruption in isolated spot, in bends of elbows and knees with itching but not relieved by scratching • Worse in open air • Better in warm room, warmth and after violent exercise

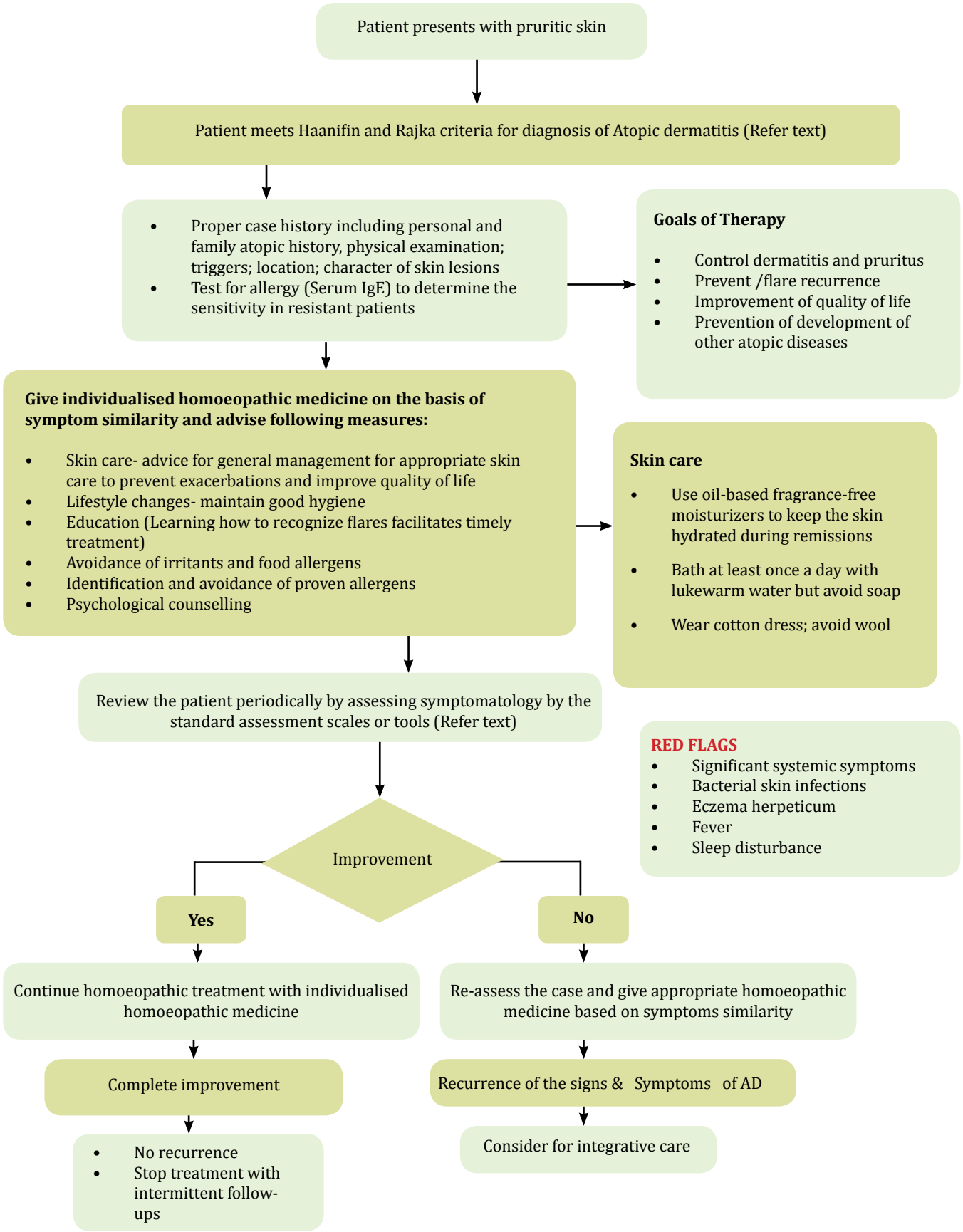
43 Boericke W. Boericke's new manual of Homoeopathic Materia Medica. 3rd revised and augmented ed. New Delhi: B. Jain Publishers Pvt. Ltd.;2007.
44 Allen HC. Allen's Keynotes- Rearranged and classified with leading remedies of the Materia Medica and bowel nosodes. 10th Reprint ed. New Delhi: B. Jain Publishers Pvt. Ltd.;2006.
45 Clarke JH. A Dictionary of Practical Material Medica. Reprint ed. New Delhi: B Jain Publishers Pvt. Ltd.; 2007.
46 Kent J.T. Lectures on Homoeopathic Materia Medica. Reprint ed. New Delhi: B. Jain Publisher's (P) Ltd.;2011.
47 Herring C. The Guiding Symptoms Of our Materia Medica. Reprint ed. New Delhi: B. Jain Publishers (P) Ltd.;1989.

Medicines	General indications	Characteristic particulars
Arsenicum album	*Chilly patient; rapid disproportionate prostration; burning pains better by heat (except headache); cadaveric odour of discharges and body; anxiety, anguish, fear of death and restlessness*	• Eczema-Dry, papular, rough, scaly eruption, itching of skin, if scratched a sore, bleeding, burning sensation is left • Associated with pustules and ulcers with offensive discharges. • Worse from cold, cold drinks or food • Scratching feels better from heat
Mercurius solubilis	*Sensitive to change of weather, changes of temperatures; profuse offensive perspiration; tongue flabby with imprints of teeth; increased salivation; fearful, shy, impulsive, increased thirst for large quantity of water. Worse at night, in wet damp weather*	• Vesicular and pustular eruptions • Ulcers, irregular in shape, edges undefined. Itching, pimples around the main eruption • Crusta lactea; yellowish-brown crusts, considerable suppuration • Worse by lying on right side, perspiring; warm room and warm bed
Bacillinum	*Taciturn, sulky, snappish, fretty, irritable, morose, depressed and melancholic. Fretful ailing, whines and complains; mind given to be frightened, particularly by dogs, having a personal or family history of chest affections patients; tendency to swelling of neck glands*	• It has been found in eczematous condition of the margins of the eyelids a strong indication for it • An inter-current for patients who have a personal or family history of chest affections • Worse at night and early morning, cold air
Calcarea carbonica	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets, aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated*	• Eczema, thin moist scabs upon head, with swollen cervical glands; eczema behind ears • Hard eczematous vesicles on backs of hands. Itch-like phagedenic blisters on index fingers. Nettle rash; better in cold air • Petechial eruptions. Itching on various parts of body • Spots glistening through skin, itching terribly; when scratching, • Worse from exertion, mental or physical, cold in every form, water, washing, moist air, wet weather, during full moon • Better in dry climate and weather
Dulcamara	*Chilly patient; prone to excessive mucus secretions; worse in cold, damp, rainy weather; restless and irritable*	• Humid eruptions on face, genitals, hands, arms around the menstrual period • Thick, brown-yellow crusts, bleeding when scratched • Worse at night • Better from moving about, external warmth

Medicines	General indications	Characteristic particulars
Graphites	*Chilly patient, takes cold easily; fatty; pale; tendency to skin affections and constipation; lumpy, thick, hard; history of delayed menstruation; skin and glands; dislikes sweets; cautious, indecisive and lazy*	• Rough, hard and persistent dryness of skin • Eczema, with profuse serous exudations, discharging a glutinous fluid, thin and sticky • Itching of the skin all over the body, with or without eruptions • Rawness, burning and stinging pain, moist places between the fingers, bends of limbs, groins, neck, behind ears, thigh, full of corrosive water • Moist eruptions in groins • Worse in warmth, at night • Better by wrapping up
Mezereum	*Chilly patient; sensitive to cold air; aftereffects of vaccination, prone to skin affections; constant longing for food; craving for fat; indifference; vexed and angry at trifles but is soon sorry and drawing for it; aggravation while alone*	• Eruptions moist; intolerable itching, with copious, serous exudations, itch and burn intensely; after vaccinations • Eruptions ulcerate and form thick scabs under which purulent matter exude • Eczema capitis, hair gets matted with ichorous pus • Worse at night in bed, as soon as he goes into a warm room the itching begins, from touch, cold washing • Better in open air
Natrum muriaticum	*Hot patient; poorly nourished, great emaciation (marked on neck); losing flesh while living well; craving for salt; aversion to bread and fatty things; constipated; increased thirst; mapped tongue with red insular patches; melancholic, sad, plays alone, irritable, cross, cries when spoken to; awkward, hasty, drops things from nervous weakness; disposition to weep without cause, consolation aggravates*	• Dry eruptions, especially on margin of hairy scalp and bends of joints, behind ears • Eczema; raw, red, and inflamed • Worse from warmth, eating salt, at seashore • Better open air, cold bathing, sweating
Petroleum	*Chilly patient; lean, emaciated subjects; symptoms appear & disappear rapidly; ailments during winter; foul smelling sweat especially on hands & feet; worse before & during thunderstorm; easily offended by trifles*	• Eczema; dry, very sensitive, hard rough, leathery, cracked (especially tips of fingers) and thickened like parchment • Slightest scratch make skin suppurate • Thick, greenish crusts, burning and itching; redness, raw; cracks bleed easily • Worse in winter, night, lying in bed, dampness • Better in warm air, dry weather

Medicines	General indications	Characteristic particulars
Psorinum	*Extremely chilly patient, wants to cover even in hottest summer weather; pale, delicate, sickly; scanty perspiration; offensive discharges; wakes up at night, feeling hungry; anxious, fearful, child is good all day while restless and troublesome at night*	• Skin: dry, coarse, dirty and filthy, as if never washed • Eczema behind ears, on scalp and in bends of elbows and armpits, joints, between fingers; in bends of elbows and around wrists, in knee joints with intolerable itching • Constant desire to scratch, scratches until it bleeds, preventing sleep, with offensive discharge • Scabs from scratching • Driven to despair with excessive itching • Worse when body becomes warm, coffee, changes of weather, in hot sunshine, from cold • Better by heat, warm clothing, even in summer
Rhus toxicodendron	*Chilly patient: sore, body bruised and stiff; restless, cannot rest in any position; red triangular tip of tongue; worse in damp, cold, rainy weather, during rest and sleep, better by continued motion; increased thirst; great apprehension at night, sad, anxious; weeping without knowing why*	• Burning eczematous eruptions with tendency to scale formation • Skin red, swollen with intense itching • Itching all over, worse on hairy parts • Better by warm, dry weather, change of position, rubbing, warm applications
Thuja occidentalis	*Chilly patient; with illusions &fixed ideas. Unhealthy skin with tendency for warty growths; oily/ greasy sweat, face & stool; perspiration on uncovered parts. Complaints worse from cold, warm air & damp humid atmosphere and chronic complaints better during a cold*	• Eruptions only on covered parts; worse after scratching. Very sensitive to touch • Dry skin, with brown spots on hands and arms • Worse from heat of bed, vaccination
Tuberculinum	*Takes cold easily; tall, lean, thin, narrow- chested, active & precocious mentally but weak physically; emaciated with good appetite; family/ personal history of tuberculosis; changeability of symptoms; Obstinate and disobedient children; irritable, fretful, desire to use foul language, discontented, fear of dogs*	• Chronic eczema; itching intense • Eczema: tubercular over entire body; immense quantities of white bran-like scales; from bathing; oozing behind the ears, in the hair, in folds of skin with rawness and soreness; fiery red skin • Worse at night when undressing, before a storm, dampness, early morning • Better by open air

ALGORITHM OF TREATMENT PROCESS FOR ATOPIC DERMATITIS


Patient presents with pruritic skin
Patient meets Haanifin and Rajka criteria for diagnosis of Atopic dermatitis (Refer text)
Proper case history including personal and family atopic history, physical examination; triggers; location; character of skin lesions
Test for allergy (Serum IgE) to determine the sensitivity in resistant patients
Goals of Therapy
Control dermatitis and pruritus
Prevent /flare recurrence
Improvement of quality of life
Prevention of development of other atopic diseases
Give individualised homoeopathic medicine on the basis of symptom similarity and advise following measures:
Skin care- advice for general management for appropriate skin care to prevent exacerbations and improve quality of life
Lifestyle changes- maintain good hygiene
Education (Learning how to recognize flares facilitates timely treatment)
Avoidance of irritants and food allergens
Identification and avoidance of proven allergens
Psychological counselling
Skin care
Use oil-based fragrance-free moisturizers to keep the skin hydrated during remissions
Bath at least once a day with lukewarm water but avoid soap
Wear cotton dress; avoid wool
Review the patient periodically by assessing symptomatology by the standard assessment scales or tools (Refer text)
RED FLAGS
Significant systemic symptoms
Bacterial skin infections
Eczema herpeticum
Fever
Sleep disturbance
Improvement
Yes
No
Continue homoeopathic treatment with individualised homoeopathic medicine
Re-assess the case and give appropriate homoeopathic medicine based on symptoms similarity
Complete improvement
Recurrence of the signs & Symptoms of AD
No recurrence
Stop treatment with intermittent follow-ups
Consider for integrative care

CHAPTER 6

BREAST FIBROADENOMA

BREAST FIBROADENOMA

CASE DEFINITION[1,2]

Fibroadenomas are common benign lesions of the breast that usually present as a single breast mass in young women. These are solid, round, rubbery lumps that move easily when pushed. They are assumed to be aberrations of normal breast development or the product of hyperplasic processes, rather than true neoplasm.

INCIDENCE/PREVALENCE[3,4,5,6,7]

- Fibroadenoma is the most common benign tumour of the breast under age 30 years. They usually arise in the fully developed breasts between 15-25 years of age.
- In the adolescent population, the overall incidence of fibroadenoma is 2.2% and accounts for 68% of all breast masses and 44%–94% of biopsied breast lesions.
- More than 70% of fibroadenomas present as a single mass, and 10%–25% of fibroadenomas present as multiple masses.
- They are more frequent among women in higher socio-economic classes and in dark-skinned populations.

AETIOLOGY and RISK FACTORS[2,8,9]

- The exact etiology of fibroadenoma is unknown. However, several studies show that estrogen influences the development of fibroadenomas.
- Females who take oral contraceptives before 20 years of age tend to suffer from fibroadenoma at higher rates than the general population.
- Family history of breast cancer in first-degree relatives was reported by some investigators to be related with increased risk of developing these tumours.
- There is substantial agreement between the risk factors for fibroadenoma and breast cancer. The characteristics known to increase risk of breast cancer were also found to increase the risk of fibroadenoma.
- Late menarche, more children, and larger childhood body size were also found to reduce fibroadenoma risk.
- Consumption of large quantities of vitamin C was found to be associated with reduced risk of fibroadenoma.

1 Greenberg R, Skornick Y, Kaplan O. Management of breast fibroadenomas. J Gen Intern Med.1998 Sep;13(9):640-5.
2 World Health Organization. The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines [Internet];1992 [Cited 2020 October 5]. Available from: https://icdlist.com/icd-10/D24.1
3 NLM(U.S.). Fibroadenoma of the Breast [Internet]; 2020 [Cited 2020 July 14]. Available from: http://www.nlm.nih.gov/medlineplus/ency/article/007216.htm
4 Santen R, Mansel R. Benign Breast disorders. N Engl J Med.2005; 353(3):275-85.
5 Lee M, Soltanian HT. Breast fibroadenomas in adolescents: current perspectives. Adolesc Health Med Ther.2015;6:159-63.
6 Chang DS, McGrath MH. Management of benign tumors of the adolescent breast. PlastReconstr Surg. 2007; 120(1):13-19
7 Sainsbury RC. TheBreast. In: Russell RCG, Williams NS, Bullstrode CJK, editors. Bailey and Love's Short Practice of Surgery, 24th ed. London: Edward Arnold; 2004. p. 834.
8 Ajmal M, Van Fossen K. Breast Fibroadenoma. [Updated 2020 Jul 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK535345
9 Li J, Humphreys K, Ho PJ, Eriksson M, Darai-Ramqvist E, Lindström LS, Hall P, Czene K. Family History, Reproductive, and Lifestyle Risk Factors for Fibroadenoma and Breast Cancer. JNCI Cancer Spectr. 2018 Dec 10;2(3):051.

PATHOLOGY[8,10]

Fibroadenomas are of two types:

- *Intracanalicular*- Includes proliferation of stromal cells compressing epithelial cells into clefts
- *Pericanalicular*- Includes proliferation of stromal cells around epithelial structures

On gross examination, the tumours are encapsulated, and they have a homogenous gray-white appearance on a cut section. On microscopy, they have an epithelial and a stromal component. There is presence of foam cells and apocrine cells and an absence of excessive mitotic activity or anaplasia. Calcification may also be present. The basement membrane also remains intact in fibroadenoma which reflects its benign feature. They arise from hyperplasia of a single lobule and usually grow up to 2-3 cm in size.

TYPES[8,11,12,13]

Complex fibroadenoma

These are subtypes of fibroadenomas harbouring one or more complex features, including epithelial calcifications, papillary apocrine metaplasia, sclerosing adenosis, and cysts larger than 3 mm. Approximately, 16% of fibroadenomas have been reported as complex. Complex fibroadenomas tend to occur in older patients and are often smaller than simple fibroadenomas. The risk of invasive breast cancer is increased in women with complex fibroadenomas.

Giant (Juvenile) fibroadenoma

Giant (juvenile) fibroadenoma of the breast is an uncommon variant of fibroadenoma in adolescents and young women with rapid growth and large size. Giant fibroadenomas are benign tumours, but their rapid growth and large size together with their rarity may determine difficulties in the clinical approach. Moreover, giant fibroadenomas must be excised in all cases to exclude a phyllodes tumour and to prevent deformity later.

Phyllodes tumour

A stromal tumour of the breast can be either benign or malignant. It is not a fibroadenoma; therefore, it needs to be watched closely.

DIAGNOSIS[1,10,14]

Clinical presentation

- Fibroadenomas are usually single lumps, but there may be several lumps affecting both breasts

10 Grube BJ, GiulianoAE. Benign breast diseases. In: Bereck JS, editor. Novak's Gynecology. 13th ed. Philadelphia, USA: Lippincott Williams and wilkins;2002:543-565.

11 Gobbi D, Dall'Igna P, Alaggio R, Nitti D, Cecchetto G. Giant fibroadenoma of the breast in adolescents: report of 2 cases. J Pediatr Surg. 2009 Feb; 44(2):39-41.

12 Sklair-Levy M, Sella T, Alweiss T, Craciun I, Libson E, Mally B. Incidence and management of complex fibroadenomas. AJR Am J Roentgenol. 2008 Jan; 190 (1): 214-8.

13 Dupont WD, Page DL, Parl FF, Vnencak-Jones CL, Plummer WD Jr, Rados MS, et al. Long-term risk of breast cancer in women with fibroadenoma. N Engl J Med. 1994;331(1):10–15.

14 Cerrato F, Labow BI. Diagnosis and management of fibroadenomas in the adolescent breast. Semin Plast Surg. 2013 Feb;27(1):23-5.

- Lumps may be easily moveable under the skin; firm, painless, and rubbery
- They have smooth, well-defined borders
- They may grow in size, especially during pregnancy
- Fibroadenomas often get smaller after menopause.

Fibroadenomas are usually diagnosed by:

Breast Self-Examination (BSE)[15]

It helps in early detection of breast disease. Most breast diseases are first detected by the patient rather than the physician. The woman should inspect her breasts while standing or sitting before a mirror, looking for any asymmetry, skin dimpling, or nipple retraction. She should carefully palpate her breasts with the fingers of the opposite hand. Finally, she should lie down and again palpate each quadrant of the breast, as well as the axilla. Pre-menopausal women should examine their breasts monthly during the week after menses.

Best time to do:

• Once a month
• 10 days after your menstrual period
• If not menstruating, pick a certain day-such as the first day of each month
• If on hormones then do it 1-2 days after withdrawal bleeding.

Five Steps of Breast Self-Exam (BSE)[15]

Step 1:

Begin by looking at your breasts in the mirror with your shoulders straight and your arms on your hips.

Here's what you should look for:

- If breasts are of usual size, shape, and color
- If breasts are evenly shaped without visible distortion or swelling
- If you see any of the following changes, bring them to your doctor's attention:
  - Dimpling, puckering, or bulging of the skin
  - A nipple that has changed position or an inverted nipple (pushed inward instead of sticking out)
  - Redness, soreness, rash, or swelling

Step 2:

Raise your arms and look for the same changes. Look for any dimpling of skin or in-drawing nipple

15 Breastcancer.org. Breast Self-Exam [internet]; 2019[cited 2020 Mar 11]. Available at: https://www.breastcancer.org/symptoms/testing/types/self_exam

Step 3:

While you're at the mirror, look for any signs of fluid coming out of one or both nipples (this could be a watery, milky, or yellow fluid or blood)

Step 4:

Next, feel your breasts while lying down, using your right hand to feel your left breast and then your left hand to feel your right breast. Use a firm, smooth touch with the first few finger pads of your hand, keeping the fingers flat and together. Use a circular motion, about the size of a quarter

Cover the entire breast from top to bottom, side to side — from your collar bone to the top of your abdomen, and from your armpit to your cleavage. Follow a pattern to be sure that you cover the whole breast. You can begin at the nipple, moving in larger and larger circles until you reach the outer edge of the breast. You can also move your fingers up and down vertically, in rows, as if you were mowing a lawn. This up-and-down approach seems to work best for most women. Be sure to feel all the tissues from the front to the back of your breasts: for the skin and tissues just beneath, use light pressure; use medium pressure for tissues in the middle of your breasts; use firm pressure for the deep tissues in the back. When you've reached the deep tissues, you should be able to feel down to your ribcage

Step 5:

Finally, feel your breasts while you are standing or sitting. Many women find that the easiest way to feel their breasts is when their skin is wet and slippery, so they like to do this step in the shower. Cover your entire breast, using the same hand movements described in Step 4

INVESTIGATIONS[8,10,16,17,18]

Type	Findings
Ultrasonography (USG)	USG is the primary imaging modality for younger women and pregnant or lactating patients. USG is better than mammography at identifying tumours within dense breast tissues. Fibroadenomas appear as circumscribed, homogeneous, oval, hypoechoic masses that may have gentle lobulations; a smooth, thin, echogenic capsule; variable acoustic enhancement; and homogeneity
Mammography	Indications for mammography screening: 1) Age of 40 years for the general population 2) Age of 25–30 years for BRCA1 carriers and untested relatives of BRCA carriers 3) Symptomatic women of 35 years or above with lump or other clinical evidence of breast Ca 4) Search for occult primary tumour in patients presenting with metastasis. 5) Screening mammography should not be used in pregnant women. While breastfeeding, the tissues in breasts may appear dense on a mammogram, making it hard to interpret *Findings* Well-circumscribed discrete, oval mass, hypodense or isodense of breast glandular tissue to a mass with macro-lobulation or partially obscured margins. Involuting fibroadenomas in older, typically post-menopausal patients may contain calcification, often producing the classic, coarse popcorn calcification appearance
Magnetic resonance imaging (MRI)	Breast MRI is useful when multiple breast biopsies would not be feasible for multiple lesions. They typically appear as circumscribed, oval masses and are isointense or hypointense
Aspiration cytology-Core biopsy, FNAC	Cytology is essential to exclude malignancy, if conservative treatment is considered and is helpful in identifying a benign lesion. Firm nodular mass with smear showing benign tight clusters and sheets of breast duct epithelial cells with uniform small round nuclei. No inflammatory component seen and no cytological evidence of atypia or malignancy

COMPLICATIONS[12]

Fibroadenoma shows an elevated risk of breast carcinoma compared with women of similar age in the general population; malignant transformation from fibroadenoma to cancer is rare. The risk of developing breast carcinoma has been found to be higher in patients with complex fibroadenoma than in those with non-complex fibroadenomas.

DIFFERENTIAL DIAGNOSIS[8,19]

- Juvenile fibroadenoma
- Low grade phyllodes tumour

16 Jackson VP, Rothschild PA, Kreipke DL, Mail JT, Holden RW. The spectrum of sonographic findings of fibroadenoma of the breast. Invest Radiol. 40 -34:(1)21; 1986.
17 Wilkinson S, Anderson TJ, Rifkind E, Chetty U, Forrest AP. Fibroadenoma of the breast: a follow-up of conservative management. Br J Surg. 1-390:(4)76; 1989.
18 Agrawal A, Tripathi P, Sahu A, Daftary J. Breast screening revisited. J Family Med Prim Care.2014;3(4):340-4.
19 Stanford Medicine, Surgical pathology criteria. Fibroadenoma of breast[internet];2005[cited 2006 May 27]. Available from:http://surgpathcriteria.stanford.edu/breast/fibroadenoma/differentialdiagnosis.html

- High grade phyllodes tumour
- Tubular adenoma
- Fibrocystic disease
- Hamartoma

(Adult Type) Fibroadenoma	Juvenile Fibroadenoma
Hypocellular to variably cellular stroma	Uniformly hypercellular stroma
Fibroadenoma	**Low Grade Phyllodes Tumour**
Lacks significant stromal hypercellularity	Hypercellular stroma is prominent
No stromal overgrowth	May have stromal overgrowth
No leaf-like architecture	Prominent leaf-like architecture
No condensation around ducts	Stromal condensation around ducts
Does not infiltrate	May infiltrate surrounding breast

The histologic border between these two is not always sharp.

Fibroadenoma	High Grade Phyllodes Tumour
Lacks significant stromal hypercellularity	Hypercellular stroma
No stromal overgrowth	Stromal overgrowth
No stromal atypia	Pleomorphic stromal cells
Stromal mitotic rate < 3/hpf	Elevated stromal mitotic rate, usually >4-5 per 10 hpf, abnormal forms may be found
Does not infiltrate	May infiltrate surrounding breast

Stromal overgrowth defined as at least one low power field (40x total magnification) composed entirely of stroma

Adenomatous Transformation of Fibroadenoma	Tubular Adenoma
Areas of typical fibroadenoma stroma	Scant stroma
Variable tubules	Uniform tubules

Areas typical of tubular adenoma may be found within fibroadenomas

Fibroadenoma	Fibrocystic Disease
Discrete, circumscribed lesion	May contain poorly circumscribed areas of fibrocystic change
Fibroadenoma	**Mammary Hamartoma**
Lobules infrequent	Lobules typically present (may be atrophic)
Frequent intracanalicular or tubular glandular proliferation	Morphologically normal ducts and lobules
Intralesional fat rare	Fat integral to lesion

EVALUATION and ASSESSMENT[10]

Patients who present with breast masses should undergo a medical evaluation, which includes:

- Medical and family histories
- Occurrence of any previous breast-related issues
- History of any malignancy or mantle radiation
- Constitutional symptoms
- Question about risk factors: age of menarche, first pregnancy, menopause
- Enquire about mass location, duration, change in size; whether it is dependent on menses, associated pain or discharge, and occurrence of additional masses
- Thorough history of any medications, gestational history, personal history of any exposure to radiation
- Breast examination: to assess size, mobility, and consistency of the mass. Attempts should be made to produce nipple discharge and palpation of the axillary lymph nodes should also be performed.

RED FLAGS[13]

- Any lesion being followed which significantly increases in size or develops atypical features on imaging (should undergo repeat biopsy are to be considered for excision biopsy)
- Mass becoming non-mobile, hard, enlarging, tender, fixed to overlying skin or nipple areolar complex
- Associated with axillary or supra-clavicular lymphadenopathy
- Complex fibroadenomas (Fibroadenomas with cysts, sclerosing adenosis, epithelial calcifications, or papillary apocrine changes are classified as complex)
- Fibroadenomas with proliferative disease, or a family history of breast cancer
- Juvenile fibroadenomas that are typically growing rapidly
- Giant fibroadenomas

MANAGEMENT [6,20,21,22,23,24,25]

The natural history of fibroadenoma varies from individual to individual. In some patients fibroadenomas may remain dormant without any change in size. In most of the patients, there may be slowly waxing and waning of sizes without associated pain or skin changes. Usually, fibroadenomas show spontaneous regression in 10%–40% of population during observation.

20 Sainsbury JR, Nicholson S, Needham GK, Wadehra V, Farndon JR. Natural history of the benign breast lump. Br J Surg. 2-1080:(11)75; 1988.
21 Dixon JM, Dobie V, Lamb J, Walsh JS, Chetty U. Assessment of the acceptability of conservative management of fibroadenoma of the breast. Br J Surg. 1996;83(2):264-5.
22 Carty NJ, Carter C, Rubin C, Ravichandran D, Royle GT, Taylor I. Management of fibroadenoma of the breast. Ann R Coll Surg Engl. 1995 Mar; 77(2):127-30.
23 Grady I, Gorsuch H, Wilburn-Bailey S Long-term outcome of benign fibroadenomas treated by ultrasound-guided percutaneous excision. Breast J. 2008;14(3):275-8.
24 Kaufman CS, Littrup PJ, Freman-Gibb LA, Francescatti D, Stocks LH, Smith JS, et al. Office-based cryoablation of breast fibroadenomas: 12-month followup. J Am Coll Surg. 2004; 198(6):914-23.
25 Sperber F, Blank A, Metser U, Flusser G, Klausner JM, Lev-Chelouche D. Diagnosis and treatment of breast fibroadenomas by ultrasound-guided vacuum- assisted biopsy. Arch Surg. 2003; 138(7):796-800.

Usually, other than regular observation, there is no role for allopathic medication under conservative treatment. Surgical excision is considered for patients. However, distortion of shape and texture of the breast, scarring of breast tissue and recurrence of disease after surgery, lumpectomy make breasts look smaller are the prime cause due to which patients opt for alternative treatments. If conservative management of fibroadenoma is to be advocated, physical examination, sonography, and Fine Needle Aspiration Cytology should all be performed, and their results should be compatible with fibroadenoma. The flow of management of the patient as per the age group, i.e., above or below 35 years is given in Figure 1 and 2.

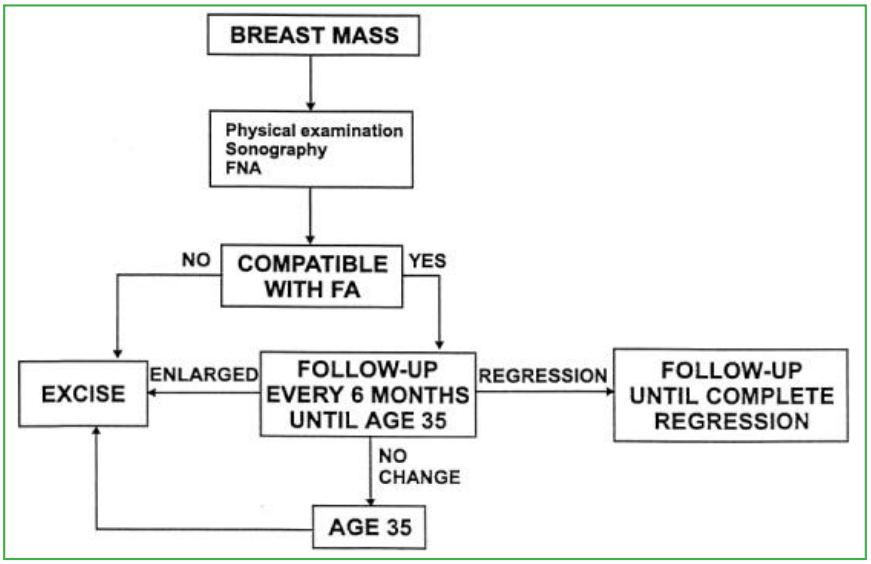


Figure 1: Management of fibroadenoma (FA) in women younger than 35 years of age

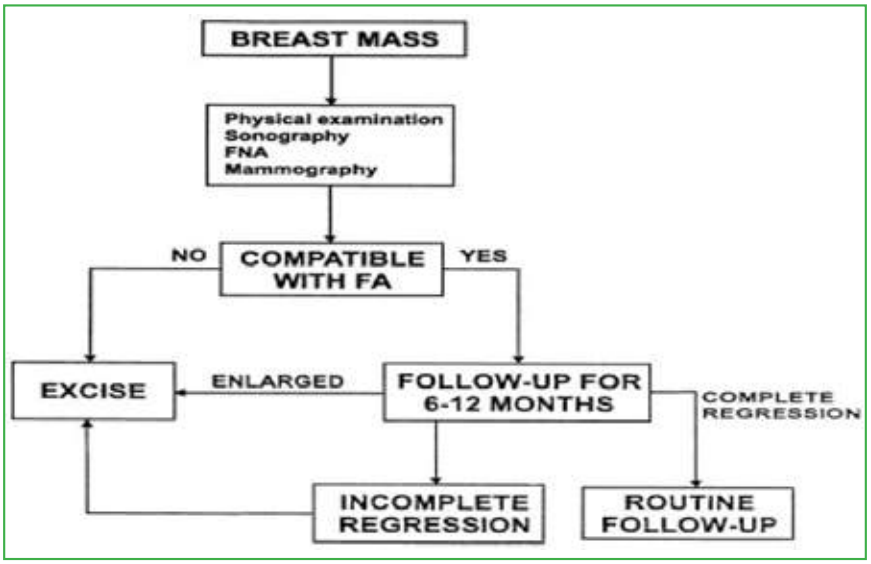


Figure 2: Management of fibroadenoma (FA) in women older than 35 years of age

HOMOEOPATHIC MANAGEMENT[26,27,28,29,30]

Individualized homoeopathy has a role in the treatment of fibroadenoma. By proper case taking and eliciting the totality of symptoms after considering the symptomatology, including mind and disposition, physical generals, predisposition, relevant past/personal/family history of the patient, miasmatic background etc., the correct similimum can be determined the regression/ resolution of fibroadenoma as well as prevention of its recurrence.

The most probable dominant miasm behind fibroadenoma of breast is sycotic miasm. A few research studies[9,24,25] have shown positive role of homoeopathic treatment in regression of fibroadenoma.

It is suggested that the constitutional homoeopathic treatment may be given as the first-line of treatment in cases as per the above algorithms. In cases with paucity of characteristic expressions, we can think of specific medicines.

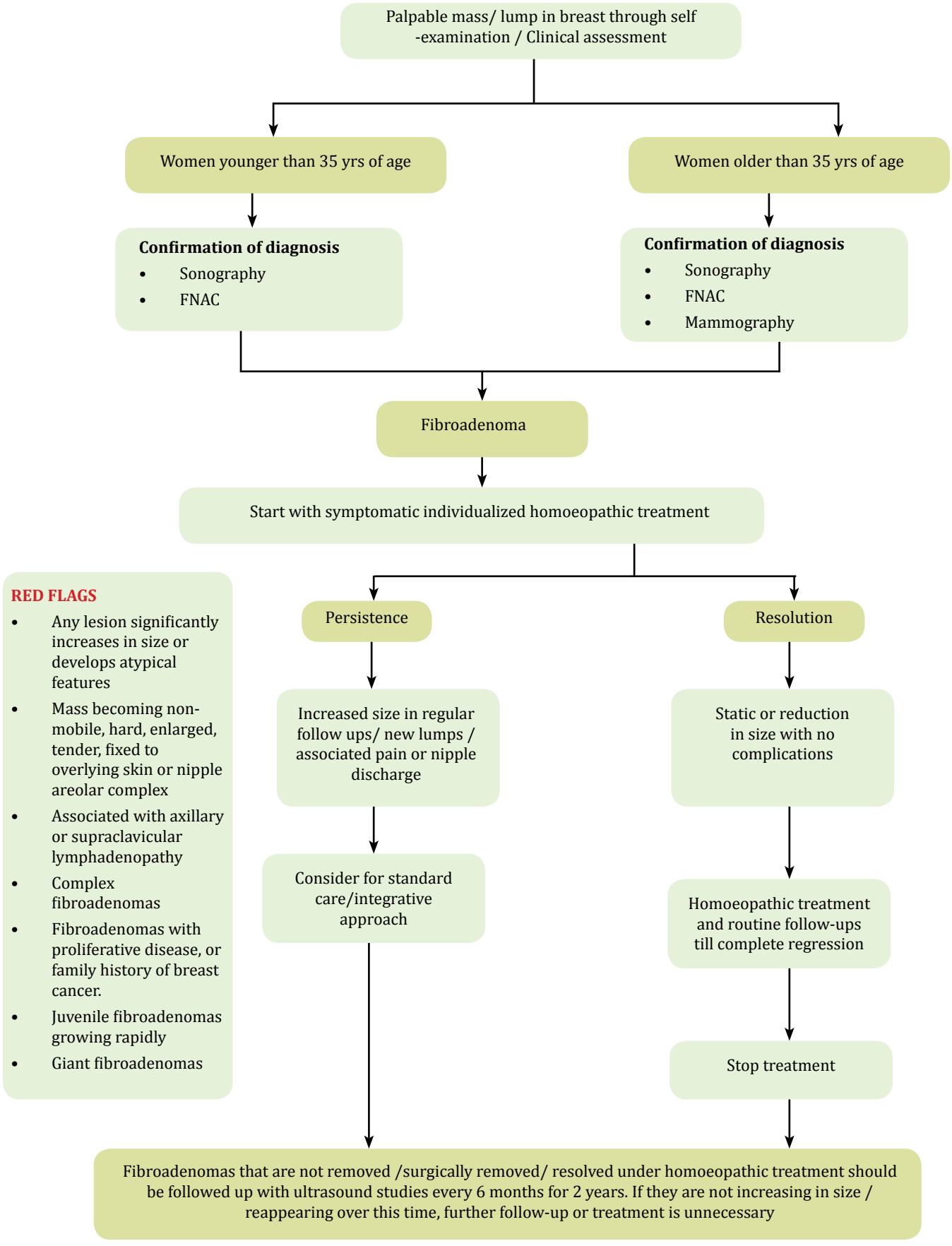
In Synthesis repertory medicines for breast fibroadenoma are found in chapter CHEST, 55 medicines are given under rubric 'tumor-mammae'.[31] The frequently verified characteristic features of some organospecific remedies are***: Scrophularia nodosa:*** Very useful in the dissipation of breast tumors, nodosities in the breasts. ***Chimaphila umbellata***: This remedy cures both atrophy or hypertrophy. Plethoric young women with large breasts. Painful tumors of mammae, with sharp pain through it, not ulcerated with undue secretion of milk. ***Calcarea fluorica***: Remedy for hard, stony glands; hard knots in the female breast. ***Lapis albus***: Affections of glands, glands have a certain elasticity and pliability about them. Persistent burning and stinging pain in mammae with hardening of glands but not like stony hardness of *Calc fl*. and *Cistus*. ***Iodium***: Dwindling of mammary glands, nodosities on the skin of mammae. ***Hydrocotyle asiatica***: Cellular proliferation in any part, hypertrophy and induration of connective tissues. ***Asterias rubens***: Nodes and induration of mammary gland, dull aching, neuralgic pain in this region**.** Tumors with lancinating pain-mostly left side. Axillary gland swollen, hard and knotted. Flabby lymphatic constitution with red face. The commonly prescribed constitutional homoeopathic medicines along with their indications are as follows:

26 Parveen S. Individualized homoeopathic treatment of breast fibroadenoma: A case report. Indian J Research in Homoeopathy 2018;12(1): 46-52.
27 Kumar S, Mohan CK, Sugathan NV, CV C. A case of left mammary fibroadenoma successfully cured by homoeopathic therapy. Research on Chronic Diseases. 2019; 2(2): 49-54.
28 Boericke W. Pocket Manual of Homoeopathic Materia Medica and Repertory.3rd revised & Augmented ed. New Delhi: B. Jain Publishers (P) Ltd.;2007.
29 Gupta G, Naveen G, Madhu C. Fibroadenoma of breast: A sonomammographical supported clinical study on the effect of homoeopathic drugs. Homoeopathy for all.2003;4(48):37-45.
30 Shukla P, Misra P, Misra RK, Jain RK, Shukla R, Manchanda R. Homoeopathic Management of Breast Fibroadenoma —An Open Label, Single Arm, Observational Trial. Homoeopathic Links. 2020;33(2):90–98.
31 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002.

Medicines	General indications	Characteristic particulars
Pulsatilla nigricans	*Hot patient; marked changeability of symptoms; aversion to fatty foods, warm foods and drinks; dislikes butter; thirstless with great dryness of mouth; tongue coated yellow or white; worse towards evening and in warm room, better in open air, by slow, gentle motion and cold applications; desire for company, mild, gentle, affectionate, yielding, weeping disposition*	• Nodes in the breast are accompanied by menstrual irregularity, amenorrhoea • Worse from heat • Better from cold applications
Bryonia alba	*Hot patient; dry; excessively thirsty, tendency to constipation, all symptoms worse from least motion; and relief from absolute rest; tongue dry, parched, cracked, thickly white coated; nervous, desire to be in one position quietly, not to be carried; desires open air*	• Stony heaviness of breasts • Stitching pains aggravates on motion • Pain in breasts at menstrual period. • Breasts hot and painful hard • Abscess of mammae • Worse from warmth, touch • Better by lying on painful side, pressure, rest
Silicea terra	*Extremely chilly patient; all symptoms worse by cold except stomach complaints, which are ameliorated; Profuse, offensive discharges; sweat profuse especially on feet; easy suppuration; affinity for glands; large head and distended abdomen; weak ankles, slow in learning to walk; constipation; obstinate, head strong, cries when spoken kindly to, nervous, apprehensive, oversensitive, irritable and fearful*	• Hard lumps in breast • Nipples very sore; ulcerate easily; drawn in • Fistulous ulcers of breast. Discharge of blood from the vagina, every time the child is nursed • Worse during menses, lying down, left side, cold • Better from warmth
Phytolacca decandra	*Fatty; soreness; restlessness; prostration; right-sided affections; profound prostration; tendency to glandular indurations and inflammation; worse at night, better in dry warm weather*	• Has powerful effect on fibrous and osseous tissues • Mammae hard and very sensitive • Tumours of the breasts with enlarged axillary glands • Breast is hard and painful and of a purple hue • Irritable breasts, before and during menses • Worse on motion, right side • Better from warmth, rest

Medicines	General indications	Characteristic particulars
Conium maculatum	*Chilly patient, perspires during sleep; desires salt; glandular affection; emotionally closed, flat or hard people, mental dullness or confusion; debility of mind and body; generally aggravation from suppression of sexual desire; the complaints of conium originates slowly and progressively*	• Stitching pain in nipples. Wants to press the breasts hard with the hand • Breasts enlarged and painful before and during menses • Stony hard glandular induration after bruises and injuries to breasts • Worse on lying down, before and during menses, bodily or mental exertion • Better by motion, pressure
Calcarea carbonica	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated*	• Breast's tender and swollen before menses • Tendency for lymphatic glandular enlargement • Hot swelling breasts • Deficient lactation, with distended breasts in lymphatic women • Worse from exertion, mental or physical • Better by lying on painful side
Carbo animalis	*Especially adapted to scrofulous and venous constitutions, old people, and after debilitating disease, with feeble circulation and lowered vitality; Glands are indurated, veins distended, skin blue. Weakness of nursing women. Ulceration and decomposition. All its secretions are offensive*	• Painful indurations in breast, especially right • Pain lancinating, cutting, burning
Sepia officinalis	*Chilly patient; tall, thin built with yellow saddle across upper part of cheeks and nose, big belly; dry flabby skin. Predisposed to take cold at change of weather. Desire for sour food which aggravates. Cheerful, active when well but indifferent and quarrelsome when sick self-absorbed, sad, weeping and indolent*	• Induration of the breast • Shooting in mammae, excoriation of nipple, nipple cracked across the crown • Worse on left side • Better by exercise, pressure, warmth of bed, hot applications, drawing limbs up

ALGORITHM OF TREATMENT PROCESS FOR BREAST FIBROADENOMA


Palpable mass/ lump in breast through self -examination / Clinical assessment
Women younger than 35 yrs of age
Women older than 35 yrs of age
Confirmation of diagnosis
Sonography
FNAC
Confirmation of diagnosis
Sonography
FNAC
Mammography
Fibroadenoma
Start with symptomatic individualized homoeopathic treatment
RED FLAGS
Any lesion significantly increases in size or develops atypical features
Mass becoming non-mobile, hard, enlarged, tender, fixed to overlying skin or nipple areolar complex
Associated with axillary or supraclavicular lymphadenopathy
Complex fibroadenomas
Fibroadenomas with proliferative disease, or family history of breast cancer.
Juvenile fibroadenomas growing rapidly
Giant fibroadenomas
Persistence
Resolution
Increased size in regular follow ups/ new lumps / associated pain or nipple discharge
Static or reduction in size with no complications
Consider for standard care/integrative approach
Homoeopathic treatment and routine follow-ups till complete regression
Stop treatment
Fibroadenomas that are not removed /surgically removed/ resolved under homoeopathic treatment should be followed up with ultrasound studies every 6 months for 2 years. If they are not increasing in size / reappearing over this time, further follow-up or treatment is unnecessary

CHAPTER 7

CHIKUNGUNYA

CHIKUNGUNYA

CASE DEFINITION[1,2]

Chikungunya fever (CHIKF) is an arthropod-borne viral disease transmitted by Aedes aegypti and Aedes albopictus mosquitoes. CHIKF is characterized by fever, headache, rash, and debilitating polyarthralgia, with an incubation period of 3–7 days.

The case definition of Chikungunya fever as proposed by the World Health Organization (WHO) is described below:

Suspected case

A suspected case involves a patient presenting with acute onset of fever, usually with chills/rigors, that lasts for 3-5 days with pain in multiple joints/swelling of extremities that may continue for weeks to months.

Probable case

A probable case is characterized by conditions that support a suspected case (see above) along with one of the following conditions:

- History of travel or residence in areas reporting outbreaks
- Ability to exclude malaria, dengue, and any other known cause of fever with joint pains.

Confirmed case

Chikungunya fever is confirmed if the patient meets one or more of the following findings irrespective of the clinical presentation:

- Virus isolation in cell culture or animal inoculations from acute-phase sera
- Presence of viral ribonucleic acid (RNA) in acute-phase sera as determined with RT-PCR
- Presence of virus-specific IgM antibodies in single serum sample in acute phase or 4-fold increase in virus-specific IgG antibody titer in samples collected at least 3 weeks apart.

INCIDENCE/PREVALENCE

- Global rates of chikungunya infection are variable, depending on outbreaks. Chikungunya,first identified in 1952, had a low-level circulation in West Africa, with infection rates linked to rainfall; periodic outbreaks were documented in Asia and Africa in the beginning of 1960s. In 2005, following several decades of relative inactivity, chikungunya re-emerged and caused large outbreaks in Africa, Asia, and America.

1 Suhrbier A, Jaffar-Bandjee MC, Gasque P. Arthritogenic alphaviruses—an overview. Nat Rev Rheumatol. 2012; 8(7):420–9.
2 World Health Organization. Guidelines for Prevention and Control of Chikungunya Fever [Internet]. 2009 [Cited 2020March 04]. Available from: https://apps.who.int/iris/bitstream/handle/10665/205166/B4289.pdf?sequence=1&isAllowed=y

- In India, chikungunya re-appeared following 32 years of absence of viral activity, majority of infections reported were from southern states and in a 2006 outbreak, India reported 1.25 million suspected cases.

AETIOLOGY[3]

Chikungunya virus is an arthropod-borne virus (arbovirus) that belongs to the family Togaviridae and to the genus Alphavirus. The virus is related to the Semliki Forest antigenic complex, a group of viruses that may be associated with joint symptoms in humans.

The virus is maintained in nature by 2 cycles: sylvatic and urban.

- In the sylvatic cycle, Aedes mosquitoes transmit the disease to primates, rodents, and birds
- Humans get infected when traveling in forested areas
- In the urban cycle, the mosquitoes transmit the disease among humans.

RISK FACTORS[4,5,6]

Strong risk factors

- Aedes mosquito bite
- Travel to/residence in endemic area
- Outdoor exposure
- Environmental factors favouring breeding of mosquitoes
- Neonate with infected mother

Other risk factors

- Low educational level
- Age>40 years
- Male sex
- Blood transfusion
- Blood group O positive
- Co-morbid illnesses (risk of more severe disease such as high blood pressure, diabetes, or heart disease); immunocompromised patients
- Neonates

Once a person has been infected, he or she is likely to be protected from future infections.

3 Higgs S, Vanlandingham D. Chikungunya virus and its mosquito vectors. Vector Borne Zoonotic Dis. 2015;15(4):231-40.
4 Dhimal M, Gautam I, Joshi HD, O'Hara RB, Ahrens, Kuch U. Risk Factors for the Presence of Chikungunya and Dengue Vectors (Aedes aegypti and Aedes albopictus), Their Altitudinal Distribution and Climatic Determinants of Their Abundance in Central Nepal. PLoS Negl Trop Dis. 2015; 9(3): e0003545.
5 Moizéis RNC, Fernandes TAAM, Guedes PMM, Pereira HWB, Lanza DCF, Azevedo JWV, et al. Chikungunya fever: a threat to global public health. Pathog Glob Health. 2018; 112(4): 182–194.
6 Guidelines for containment of chikungunya and dengue epidemic outbreaks [Internet]. [Cited 2020 March 4]. Available from: https://nvbdcp.gov.in/WriteReadData/l892s/GUIDELINES_FOR_CONTAINMENT_OF_DENGUE_FEVER%20_AND_CHIKUNGUNYA_EPIDEMICS.pdf

PATHOGENESIS[7]

A plethora of cutaneous manifestations, including erythematous maculopapular or morbilliform eruption, which subsides without any sequelae in 3–4 days, has been reported after CHIKF. This eruption could be a hallmark of an inflammatory response of the skin (the portal of entry of the virus after the mosquito's bite) to mobilize resident cells such as keratinocytes, melanocytes, and dermal fibroblasts

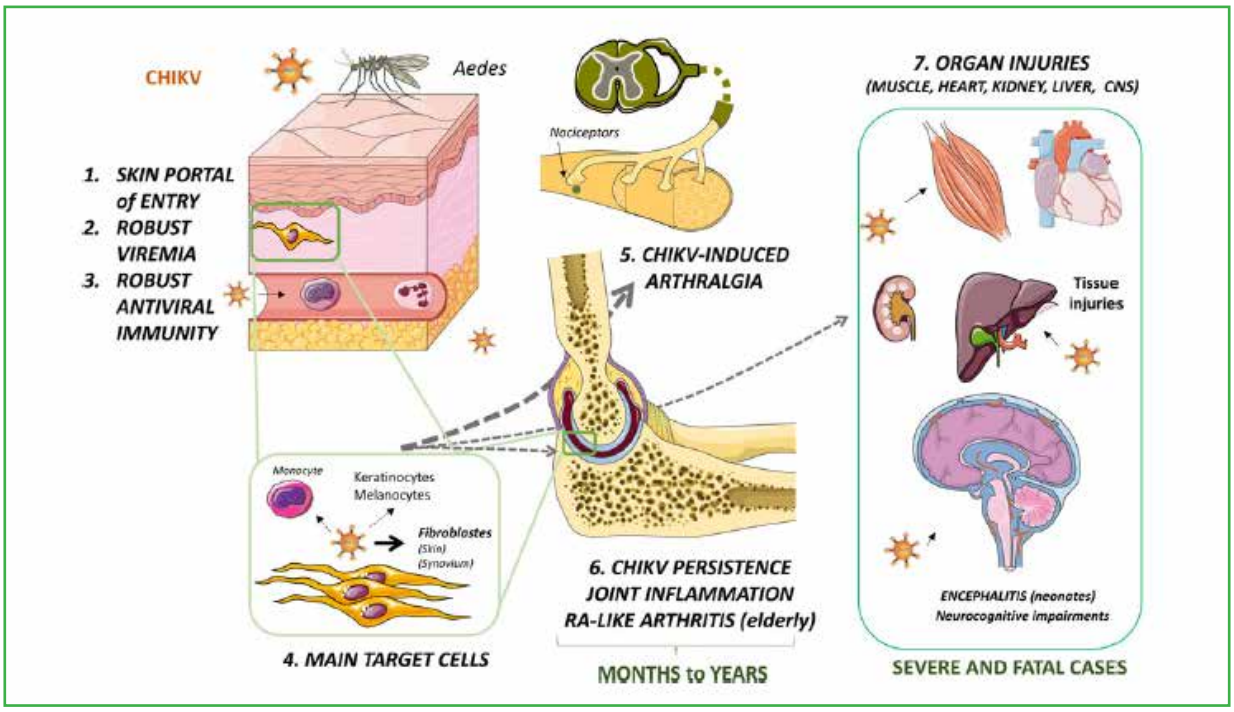


Figure 1:Skin is a major portal of entry (1), and resident structural cells encounter the virus delivered by the mosquito (Aedes species), together with immunoregulatory proteins from mosquito's saliva. The local immune response (2 and 3) is critical but does not prevent the virus from spreading to other organs, such as joints (4), skeletal muscles, heart, kidney, liver, and, more rarely, the brain. Chikungunya virus (CHIKV) mainly targets fibroblasts (4). Macrophages can also be infected and may represent a potential reservoir in tissue sanctuaries. Hence, CHIKV may be protected from the robust innate and adaptive immune responses. Ballooned macrophages in synovial tissues are classically associated with viral persistence and, allegedly, contribute to a chronic inflammatory response. These events may drive arthralgia (inflammatory nociception) for months to years and can evolve to arthritis in some patients (6). Rhabdomyolysis, hepatitis, myocarditis, and neuropathology's may be observed in the more severe cases in adults, while neonates infected at birth may be at risk of encephalitis andand death.Courtesy: Gasque P et al. Chikungunya Pathogenesis: From the Clinics to the Bench.

7 Gasque P, Bandjee MCJ, Reyes MM, Viasus D. Chikungunya Pathogenesis: From the Clinics to the Bench. The Journal of Infectious Diseases. 2016; 214(5): 446–48.

DIAGNOSIS

Clinical presentation[2,8,9]

- After an incubation period of 4-7 days, there is a sudden onset of flu-like symptoms which may include headache, nausea, vomiting, muscle pain, joint swelling, or skin rashes. The rash are mostly of the pruriginous maculopapular type on the chest but bullous or other forms can also be seen and at times may desquamate.
- Symptoms usually last for 3–7 days after being bitten by an infected mosquito.
- Severe joint and body pain: This type of pain is frequent and keeps increasing as the days pass. Sometimes, the joints also get swelled up. The joint pain may persist for months.
- Appearance of rashes usually on limbs and trunks and also known to cause rashes on entire body which keep coming back frequently.
- Redness of eye: This typically means that one is likely to suffer from conjunctivitis and face difficulty in looking towards the light.
- Bleeding: The person suffering from this disease is at a high risk of suffering from bleeding. Haemorrhage may occur at times.
- Residual arthritis, with morning stiffness, swelling and pain on movement may persist for weeks or months after recovery.
- Although rare, the infection can result in meningoencephalitis (swelling of the brain), especially in newborns and those with pre-existing medical conditions.
- Chikungunya disease does not often result in death, but the symptoms can be severe and disabling.

INVESTIGATIONS[10]

Three main laboratory tests are used for diagnosing Chikungunya fevers:

- Virus isolation (viral RNA detection)
- Serological tests (IgM capture ELISA most sensitive)
- Molecular technique of polymerase chain reaction (PCR)
- Specimen is usually blood or serum but in neurological cases with meningo-encephalitic feature CSF may also be sent as specimen

Investigations	Findings
Blood test	
○ CBC	○ Decreased lymphocyte
○ ESR	○ Increased
○ Liver enzymes	○ Mild elevation
Serology	IgM Chik (positive)
PCR	CHIK RT-PCR (positive)

8 Simon F, Javelle E. Chikungunya Virus Infections. The New England Journal of Medicine. 2015;373(1):93-5.
9 National Vector Borne Disease Control Programme. Chikungunya fever—national guidelines[internet].[Cited 2020 march 04]. Available from: https://nvbdcp.gov.in/index4.php?lang=1&level=0&linkid=489&lid=3766
10 Chang K, Hsieh HC, Tsai JJ, Lin WR, Lu PL, Chen YH. Diagnosis and management of imported Chikungunya fever in Taiwan: a case report. Kaohsiung J Med Sci. 2010; 26(5):256–60.

DIFFERENTIAL DIAGNOSIS [2,18]

Fever with or without arthralgia is a very common manifestation of several other diseases. Some of the diseases which can be considered in differential diagnosis are:

<table>
<tr><th>Disease</th><th>Differential features</th></tr>
<tr><td>Dengue Fever</td><td>Severe low back pain with purpuras or active bleeding might suggest dengue fever. Confirmatory laboratory diagnosis is possible.
<table>
<tr><th></th><th>Clinical signs and symptoms</th><th>Chikungunya fever</th><th>Dengue fever</th></tr>
<tr><td>1</td><td>Onset of fever of 40°C</td><td>Acute</td><td>Gradual</td></tr>
<tr><td>2</td><td>Duration of fever</td><td>1-2 days</td><td>5-7 days</td></tr>
<tr><td>3</td><td>Maculopapular ra sh</td><td>Frequent</td><td>Rare</td></tr>
<tr><td>4</td><td>Presence of shock and severe haemorrhage</td><td>Rare</td><td>Common</td></tr>
<tr><td>5</td><td>Arthralgia</td><td>Frequent and lasting over a month</td><td>Infrequent and short duration</td></tr>
<tr><td></td><td>Laboratory parameters</td><td></td><td></td></tr>
<tr><td>1</td><td>Leukopenia</td><td>Frequent</td><td>Infrequent</td></tr>
<tr><td>2</td><td>Thrombocytopenia</td><td>Infrequent</td><td>Frequent</td></tr>
</table></td></tr>
<tr><td>Malaria</td><td>Patient can present with high fevers and may also complain of joint pains. Periodicity of fever and alteration of consciousness / seizures should prompt diagnosis for malaria</td></tr>
<tr><td>Leptospirosis</td><td>Severe myalgia localized to calf muscles with conjunctival congestion/ or subconjunctival haemorrhage with or without oliguria or jaundice in a person with history of skin contact to contaminated water would suggest Leptospirosis</td></tr>
<tr><td>Rheumatic fever</td><td>More common in the children and presents with fleeting (migratory) polyarthritis predominantly affecting the large joints. Modified Jones criteria should be the basis for diagnosis. Raised ASO titre and a history of recurrent sore throat are other points to be noted</td></tr>
<tr><td>Reactive arthritis</td><td>In general, any arthritis that follows a febrile gastrointestinal or genitourinary infection (triggering microbes) is considered a reactive acute inflammatory arthritis if it lasts less than six months. The hallmark feature is enthesitis where collagenous structures such as tendons and ligaments inserting into bones are involved. Oral mucosal ulcers are seen</td></tr>
<tr><td>Serum sickness illness</td><td>Polyarthritis may be associated with a serum sickness type/reaction caused by vaccine, medication or other viral infections</td></tr>
<tr><td>Rickettsial disease</td><td>Can present with fever, rash and joint pains. Confirmed by serology</td></tr>
</table>

COMPLICATIONS[11,12,13,14]

- Persistent severe arthralgias- lead to long-term disability and loss of workdays
- Neurological- Encephalopathy and encephalitis, Myelopathy and myelitis, Acute disseminated encephalomyelitis, Guillain-Barré syndrome
- Ocular complications- retinal detachment, intra-retinal haemorrhage, and branch retinal artery occlusion
- The burden on the economy in terms of loss of productivity and income is estimated to be significant

RED FLAGS[16]

- Persistent severe arthralgias
- Neurological- Encephalopathy and encephalitis
- Myelopathy and myelitis, Acute disseminated encephalomyelitis
- Ocular complications- retinal detachment, intra-retinal haemorrhage, and branch retinal artery occlusion
- Guillain-Barré syndrome.

PREVENTION[15]

- Minimizing vector population: Elimination of breeding places of Aedes mosquitoes by removal of water containing receptacles, space spraying of insecticide, residual application on surfaces where the mosquito is likely to alight and use of larvicide.
- Minimize the vector-patient contact: Use mosquito repellents on skin and clothing, when indoors, staying in well-screened areas. Use bed nets if sleeping in areas that are not screened or air-conditioned. When working outdoors during day times, wearing long-sleeved shirts and long pants to avoid mosquito bite.
- Reporting to the nearest public health authority: for the prevention of epidemic.

MANAGEMENT

General management[16]

- Treatment of Chikungunya fever is symptomatic and supportive. Adequate fluid intake must be ensured.
- Chikungunya fever is usually self-limiting and resolves with time. Symptomatic treatment is recommended after excluding other more dangerous diseases.

11 Das T, Jaffar-Bandjee MC, Hoarau JJ, Krejbich Trotot P, Denizot M, Lee-Pat-Yuen G. Chikungunya fever: CNS infection and pathologies of a re-emerging arbovirus. Prog Neurobiol. 2010;91(2):121-9.
12 Fourie ED, Morrison JG. Rheumatoid arthritic syndrome after chikungunya fever. S Afr Med J. 1979;56(4):130-2.
13 Krishnamoorthy K, Harichandra kumar KT, Kumari AK, Das LK. Burden of chikungunya in India: estimates of disability adjusted life years (DALY) lost in 2006 epidemic. J Vector Borne Dis. 2009; 46(1):26-35.
14 Mehta R, GerardinP, de Brito CAA, Soares CN, Ferreira MLB, Solomon T. The neurological complications of chikungunya virus: A systematic review. Rev Med Virol. 2018; 28(3): p. 1978.
15 World health organization. Outbreak and spread of chikungunya. WHO Weekly epidemiological record. 2007; 82(47):409-416.
16 Central Council for Research in Homoeopathy . Epidemics- IMR project[Internet]. [Cited 2020 March 4]. Available from: https://www.ccrhindia.nic.in/admnis/admin/showimg.aspx?ID=6475

- There is no vaccine currently available for Chikungunya. Supportive care with rest is indicated during the acute joint symptoms.
- Movement and mild exercise tend to improve stiffness and morning arthralgia, but heavy exercise should be avoided as these may exacerbate rheumatic symptoms.

Homoeopathic management

Given the limited number of options for providing any relief in conventional medicine, homeopathy has emerged as an extremely effective mode of treatment for chikungunya infections. Homeopathy provides effective and safe pain relief in these patients while keeping the range of fever low. It is important to remember that in this condition the severity of muscle, joint pains and headache can be severe. Initially indicated acute homoeopathic remedies may give relief which may be followed by constitutional remedy in order to get rid of post-fever arthralgia.

In synthesis repertory[17], rubric 'Pain-fever' in chapter EXTREMITIES can be found. The homoeopathic literature mentions several medicines like *Belladonna, Eupatorium perfoliatum, Bryonia alba, Phosphorus* etc. as effective medicines for the disease. Studies[18,19,20] conducted on this disease have been able to validate a few of the medicines which are usually prescribed for chikungunya.

The frequently verified characteristic feature of one of the specific remedy for Chikungunya is: ***Polyporus pinicola***: Intermittent, remittent fever, pain in back, ankles and legs.

The list of frequently prescribed polychrest medicines with their indications are given below:[21,22]

Medicines	General indications	Characteristic particulars
Eupatorium perfoliatum	*Also known as "bone-set", it relieves pain in limbs and muscles which accompany some forms of febrile diseases or post febrile arthralgia; Worn out constitutions from inebriety; Marked periodicity; Restless, chilly and nauseated*	• Bone pains of all descriptions; sensation as if bone was being broken causing inability to lie in bed • Aching pain in bones of extremities with soreness of flesh • Bruised, sore ache in back, ascending backache • Swelling of ankles and feet • The chills begin in the small of the back; high fever with increased aching, followed by sweat scanty or profuse; sweat ameliorates all pains except headache, which is aggravated • Worse periodically

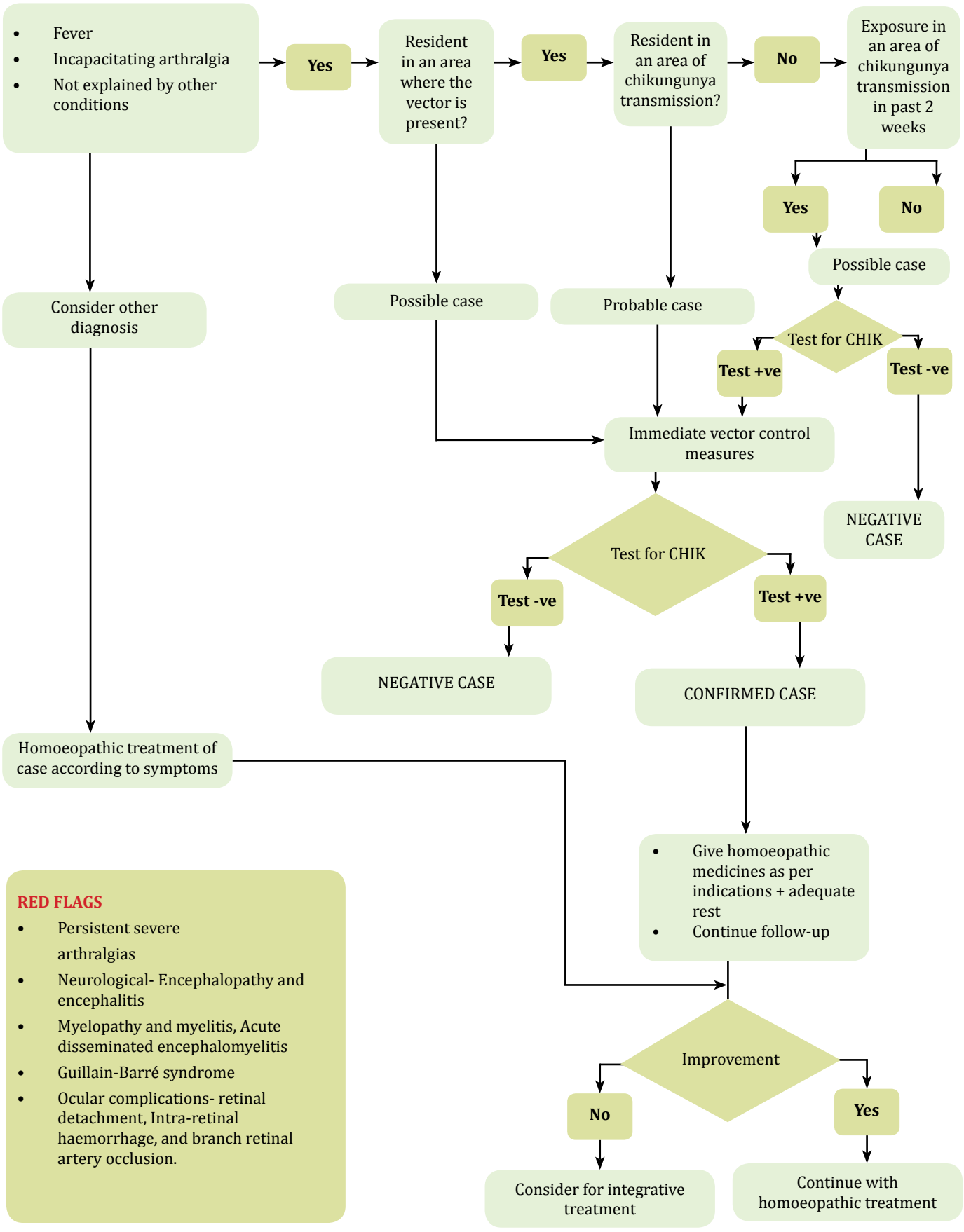
17 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002.
18 Nair KRJ, Gopinadhan S, Roja V, Nayak D, Oberai P, Singh H, et al. Homoeopathic Genus Epidemicus 'Bryonia alba' as a prophylactic during an outbreak of Chikungunya in India: A cluster -randomised, double -blind, placebo- controlled trial. Indian J Res Homoeopathy.2014;8(3):160-5.
19 Wadhwani G.G. Homeopathic drug therapy Homeopathy in Chikungunya Fever and Post-Chikungunya Chronic Arthritis: an observational study. Homeopathy. 2013; 102(3):193-198.
20 Rejikumar R, Dinesh RS. A Study on the Prophylactic Efficacy of Homoeopathic Preventive Medicine Against Chikungunya Fever[internet]. [Cited 2020 March 6]. Available at: https://www.similima.com/pdf/efficacy-chikunguna-kerala.pdf.
21 Boericke W. Boericke's New Manual of Homoeopathic Materia Medica with Repertory: Third Revised & Augmented Edition based on Ninth Edition. New Delhi: B. Jain Publishers(P) Ltd.; 2007.
22 Allen HC. Keynotes and Characteristics with Comparisons of some of the Leading Remedies of the Materia Medica. New Delhi: B. Jain Publishers(P) Ltd.;2007.

Medicines	General indications	Characteristic particulars
Apis mellifica	*Hot patient- closed, especially warm and heated rooms are intolerable; thirstless; oedematous, bag like puffy swelling under the eyes; glands enlarged and indurated; worse afternoons; better from cold application; constant whining, nothing seems to satisfy; irritable; sensitive to touch; cannot bear to be left alone; restlessness and fidgety, awkward drops things easily from hands; hard to please*	• Afternoon chill, with thirst • External heat, with smothering feeling • Burning, stinging pains, like bee stings, occurring occasionally • Tired, as if bruised in every limb, and esp. in the back, as after exertion • Worse on motion, heat, on rising after sitting, after sleeping, right side • Better in open air, uncovering
Arnica montana	*Best acts on plethoric, dark haired people of rigid muscles, with a nervous, sanguine nature, but it acts feebly in debilitated people with impoverished blood; Especially adapted to those who remain long impressed by even slight mechanical injuries; Sore, lame, bruised feeling, as if beaten; Painful and offensive remedy; Fears being struck on approach; Says nothing ails him, answers slowly, with an effort*	• Shivering over whole body; chilliness on the side lain on • Heat and redness of the head, while rest of the body is cold, warm forehead and cold nose • Febrile symptoms closely related to typhoid • Pain as from fatigue or dislocation, in limbs • Unsettled pains, rapidly moving from joint to joint • Pains worse in evening, night, touch, motion, damp cold • Better on lying down
Arsenicum album	*Chilly patient; rapid disproportionate prostration; burning pains better by heat, hot drinks and hot applications (except headache); cadaveric odour of discharges and body; anxiety, anguish, fear of death and mentally restless with physical inability*	• Restlessness and anxiety during fever severe weakness • Fever worse midday or midnight • Nocturnal pains, which are felt even during sleep, and which are so unbearable that they excite despair and fury • Worse in wet weather, after midnight, from cold, right side
Bryonia alba	*Irritable, vehement and angry; wants to be recumbent; dryness of mucous membranes with excessive thirst for large quantities at long intervals; all symptoms worse from least motion and relief from absolute rest and lying on painful side; tongue dry, parched, cracked, thickly white coated*	• Fever with aching in every muscle, bitter taste and thirst • Cold and shivering in the body, even in bed, in the evening, or accompanied by pains in all the limbs and cold sweat on the forehead; chilliness worse in room, better in open air • Tension, drawing pains, acute pullings and shootings, esp. in the limbs, and chiefly during movement, with insupportable pains on being touched, sweat of the part affected, and trembling of that part when the pains diminish

Medicines	General indications	Characteristic particulars
		• Joints red, swollen, and hot with stitching and tearing pain • Aggravation of the pains and sufferings at night, or in the evening, towards nine o'clock, as well as after having eaten, cannot sit up • Better by lying on painful side, rest
Belladonna	*Congestion is the keynote of the medicine; dryness, bright redness, burning heat, great pain and fullness or swelling, rush of blood to head or face, throbbing of carotids; great sensitiveness especially of special senses; pains that come and go suddenly; excited mental state, delirium, restless sleep, convulsive movements; dryness of mouth and throat with aversion to water; dilated pupils*	• A high feverish state, with comparative absence of toxemia. Cold limbs and hot head • High fever with burning heat. No thirst with fever. Joints swollen, red, shining with red streaks radiating • Shooting, or tearing, aching pains in the limbs • Bruise-like pains in the joints and bones • Rheumatic pains (in the joints) flying from one place to another • The pains are aggravated, chiefly at night, and in the afternoon towards three or four o'clock, touch, jar, lying down • Better in semi-erect posture
Cinchona officinalis	*Profuse exhausting discharges, haemorrhages from orifices, weak, oversensitive, nervous; sensitive to draughts of air, wants to be wrapped up but cannot bear fire; face pale, sickly, earthy, sunken eyes surrounded by blue margins; Intermittent fevers; periodicity; desire for sour, sweets and delicacies, intolerance to fruits; apathetic, indifferent, taciturn, oversensitive to noise, touch and jar; aversion to mental and bodily exertion*	• Pain in the limbs and joints as if sprained • Swollen joints very sensitive, with dread of open air • Rheumatic pains (in the joints) flying from one place to another < chiefly at night, and in the afternoon towards three or four o'clock • All stages of fever well marked but none at night; perspiration on covered parts or during sleep • Worse from slightest touch, at night • Better from hard pressure, open air, warmth

Medicines	General indications	Characteristic particulars
Gelsemium sempervirens	*Insidious onset of complaints; aching, tired, heavy, weak and sore; dull, drowsy and dizzy; tremors, nervous, desires to be held; thirstless; great depression from heat of sun or summer; desire to be quiet, to be let alone; does not wish to speak or have any one near her, even if the person be silent*; worse damp weather	• Chills up and down the back • Dumb ague with marked muscular soreness, great muscular prostration and violent headache; muscles refuse to obey will • Rheumatic pains in bones and joints especially at night • Worse before a thunderstorm, emotion, or excitement, bad news, when thinking of his ailments • Better from bending forward, by profuse urination, open air, continued motion
Rhus toxicodendron	*Chilly patient; sore, body bruised and stiff; restless, cannot rest in any position; red triangular tip of tongue; worse in damp, cold, rainy weather, during rest and sleep, better by continued motion; increased thirst; great apprehension at night with fear of being poisoned; sad, anxious, weeping without knowing why*	• Fever with polyarthritis and vesicular or urticarial or erysipelatous lesions • Pains: as if sprained; as if a muscle or tendon were torn from its attachment as if bones were scrapped with a knife • Corners of mouth ulcerated, fever blisters around mouth and on chin • Chilly, as if dashed with cold water followed by heat and inclination to stretch the limbs • Worse at night, when lying on back or right side • Better in warm, dry weather, motion; walking, change of position, from stretching out limbs
Pyrogenium	*Great remedy for septicemia, with rapid decubitus and intense restlessness; bed feels hard, moves to relieve the soreness of part lain on; all discharges are horribly offensive- diarrhea, vomit, sweat, breath, etc.; tongue smooth as if varnished*	• Pulse out of proportion to temperature • All fevers commencing with pain in limbs • Coldness and chilliness begins between scapulae, must inhale heat from fire for relief • Great heat with profuse hot sweat but sweating does not cause a fall in temperature; must have fresh air • Perspiration profuse and foul with carrion like odour, without relief • Relief from motion

ALGORITHM OF TREATMENT PROCESS FOR CHIKUNGUNYA



RED FLAGS

- Persistent severe arthralgias
- Neurological- Encephalopathy and encephalitis
- Myelopathy and myelitis, Acute disseminated encephalomyelitis
- Guillain-Barré syndrome
- Ocular complications- retinal detachment, Intra-retinal haemorrhage, and branch retinal artery occlusion.

CHAPTER 8

CHRONIC SUPPURATIVE OTITIS MEDIA

CHRONIC SUPPURATIVE OTITIS MEDIA

CASE DEFINITION[1,2]

Chronic suppurative otitis media (CSOM) is persistent inflammation of the middle ear or mastoid cavity, characterised by recurrent or persistent ear discharge (otorrhoea) over 2–6 weeks through a perforation of the tympanic membrane.

INCIDENCE/PREVALENCE[3,4 5]

- CSOM is a highly prevalent disease especially in childhood and leads to significant morbidity worldwide.
- The world's wide prevalence of CSOM is 65-330 million people mainly in developing countries;39-200 million (60%) people suffer from clinically significant hearing impairment. The prevalence of CSOM in India is 7.8%.

AETIOLOGY[4,6]

- In CSOM, the bacteria may be aerobic, e.g., Psedomonas aeruginosa, Escherichia coli, S. aureus, Streptococcus pyogenes, Proteus mirabilis, *Klebsilla* species or anaerobic, e.g, Bacteroids, pepto streptococcus, Proprioni bacterium). The bacteria are infrequently found in the skin of the external auditory canal, but may proliferate in the presence of trauma, inflammation, laceration or high humidity.
- Ascending infections via the eustachian tube like infection from tonsils, adenoids, and infected sinus may be the cause of CSOM.

RISK FACTORS[7]

- Genetic disposition
- Allergy to ingestions (milk, eggs, fish, etc.), atopy
- Upper respiratory tract infections (with pharyngeal reflux, with snoring)
- History of acute otitis media or recurrent otitis media
- Second-hand smoke
- Medication during pregnancy, inadequate antibiotic treatment
- Indoor cooking
- Low economic status, overcrowding
- Overweight

1 Kumari MS, Madhavi J, Krishna NB, Meghanadh KR, Jyothy A. Prevalence and associated risk factors of otitis media and its subtypes in South Indian population Egyptian Journal of Ear, Nose, Throat and Allied Sciences. 2016; 17(2): 57-62.
2 Jose A. Chronic suppurative otitis media. *BMJ* clinical evidence. 2007.
3 Bhutta MF, Thornton RB, Kirkham LS, Kerschner JE, Cheeseman MT. Understanding the aetiology and resolution of chronic otitis media from animal and human studies. Disease Models & Mechanisms. 2017;10(11):1289-1300.
4 World Health Organization. Chronic suppurative otitis media: burden of illness and management options. [Internet] Geneva: World Health Organization. 2004 [cited 2021 March 19]. Available from: https://apps.who.int/iris/handle/10665/4294.
5 Mittal R, Lisi CV, Gerring R, Mittal J, Mathee K, Narasimhan G et al. Current concepts in the pathogenesis and treatment of chronic suppurative otitis media. J Med Microbiol. 2015;64(10):1103–1116.
6 Dhingra PL. Diseases of Ear, Nose, Throat &Head and Neck Surgery. 6th. India**:** Elsevier publishers; 2014.
7 Zhang Y, Xu M, Zhang J, Zeng L, Wang Y, et al. Risk Factors for Chronic and Recurrent Otitis Media–A Meta-Analysis.PLoS ONE. 2014; 9(1): p. 86397.

TYPES AND PATHOGENESIS[5,6]

Clinically it is divided into two types:

1. Tubotympanic
2. Atticoantral

1. Tubotympanic type: It also is called the *safe or benign* type. It involves antereo-inferior part of middle ear cleft, i.e., eustachian tube and mesotympanum and is associated with a central perforation of tympanic membrane. There is no risk of serious complications.

A. *Pathogenesis*

In this type, the disease remains localized to the mucosa and, that too, mostly to antero-inferior part of the middle ear cleft. Like any other chronic infection, the processes of healing and destruction go hand in hand and either of them may take advance over the other, depending on the virulence of organisms and resistance of the patient. Thus, acute exacerbations are not uncommon.

The pathological changes in this type are:

1. Perforation of pars tensa- mostly central perforation and size and position varies.
2. Middle ear mucosa- It may be normal when disease is quiescent or inactive. It is edematous and velvety when disease is active.
3. Polyp- It is a smooth mass of oedematous and inflamed mucosa which has protrudes through a perforation and presents in the external canal. It is usually pale in contrast to pink, fleshy polyp seen in atticoantral disease.
4. Ossicular chain- It is usually intact and mobile but may show some degree of necrosis, particularly of the long process of incus.
5. Tympanosclerosis-It is hyalinization and subsequent calcification of subepithelial connective tissue. It is seen in remnants of tympanic membrane or under the mucosa of middle ear. It is seen as white chalky deposit on the promontory, ossicles, joints, tendons and oval and round windows. These tympanosclerotic masses may interfere with the mobility of these structures and cause conductive deafness.
6. Fibrosis and adhesions- These are the result of healing process and may further impair mobility of ossicular chain or block the eustachian tube.

B. *Signs and Symptoms*[8]

1. Ear discharges (Otorrhea): It is odourless, mucoid or mucopurulent, constant or intermittent. The discharge appears mostly at time of upper respiratory tract infection or on accidental entry of water into the ear.
2. Hearing loss: It is conductive type, sometimes patient reports of a paradoxical effect, i.e., hears better in the presence of discharge than when the ear is dry called "*round window shielding effect".*

8 Singh M.M, Thingbaijam S, Lyngdoh N.C, Perme K. A study on clinical features and management of chronic suppurative otitis media in children. Journal of Medical Society. 2004; 18(2):58-60.

3. Central perforation.

4. Middle ear mucosa. It is seen when the perforation is large. Normally, it is pale pink and moist. When inflamed, it looks red, oedematous and swollen. Occasionally, a polyp may be seen.

2. Atticoantral type: It is also called *unsafe or dangerous type*. It involves posterosuperior part of the cleft and is associated with an attic or a marginal perforation. This disease is often associated with a bone eroding process such as cholesteatoma, granulations or osteitis. Risk complications are high in this variety.

A. *Pathogenesis*

1. Cholesteatoma.
2. Osteitis and granulation tissue- Osteitis involves outer attic wall and posterior-superior margin of the tympanic ring. A small of granulation tissue surrounds the area of ostetitis and may even fill the attic, antrum, posterior tympanum and mastoid. A fleshy red polypus may be seen filling the meatus.
3. Ossicular necrosis- It is common in this type of disease. Destruction may be limited to the long process of incus or may also involve stapes super structure, handle of malleus, or the entire ossicular chain. Therefore, hearing is loss is always greater than in tubotympanic type.
4. Cholesterol granuloma- They are composed of granulation tissue with foreign body giant cells surrounding the cholesterol crystals.

B. *Signs and symptoms* [5, 8]

1. Ear discharge- Usually scanty, but always foul smelling due to bone destruction.
2. Hearing loss- Cholestatoma, having destroyed the ossicles leads to hearing loss mostly conductive but sensorium element may also be added.
3. Bleeding- It may occur from granulation or the polyp, when cleaning the ear.
4. Perforation- It is either attic or posteriosuperior marginal type.
5. Retraction pocket- An invagination of tympanic membrane is seen in the attic or posterior-superior are of pars tensa.
6. Cholestatoma- Pearly- white flakes of cholestatoma can be sucked from the retraction pockets.

DIAGNOSIS [4,9]

- Signs and symptoms (like hearing loss, aural discharge, headache, itching in auditory canal)
- Complete otoscopic examination (the integrity of tympanic membrane and the attic for exclusion of cholesteatoma)

9 Bareeqa SB, Ahmed SI. Comment to Empirical Therapy for Chronic Suppurative Otitis Media. Clin Med Insights Ear Nose Throat. 2018; 11:1179550618810226.

INVESTIGATIONS[5]

Investigation	Findings
Otoscopy	• It may reveal presence of cholesteatoma, its site and extent, evidence of bone destruction, granuloma, condition of ossicles, and pocket of discharges
Tuning fork tests and Audiogram	• These are essential for assessment and to confirm the degree and type of hearing loss
X -ray of Mastoid (Lateral View)	• It indicates extent of bone destruction and degree of mastoid pneumatization
CT Scan of temporal bone	• It reveals bone erosion from cholesteatoma, ossicular erosion, involvement of petrous apex and sub-periosteal abscess
MRI	• If intratemporal or intracranial complications are suspected, it can reveal dural inflammation, sigmoid sinus thrombosis, labyrinthitis and extradural and intracranial abscess

EVALUATION AND ASSESSMENT

The following outcome measures may be used to evaluate the CSOM:

1. Chronic ear survey (CES)[10,11]
2. Chronic Otitis Media Outcome Test (COMOT-15 questionnaire score)[12]
3. Chronic Otitis Media Questionnaire 12 (COMQ-12)[13,14]
4. Health –related Quality of life (HR QoL)[16]

DIFFERENTIAL DIAGNOSIS[10]

1. Otitis Externa (inflamed, eczematous canal without a perforation)
2. Foreign body
3. Impacted ear wax
4. Cholesteatoma
5. Granulomatous with polyangitis (Wegner's Granulomatosis)
6. Neoplasm

COMPLICATIONS[4,15,16]

Complications of CSOM are classified into two main groups

10 Nadol JB, Staecker H, Gliklich RA. Outcomes Assessment for Chronic Otitis Media: The Chronic Ear Survey. The Laryngoscope. 2000; 110(3):32 - 35.

11 Ralli G, Milella C, Ralli M, Fusconi M, La Torre G. Quality of life measurements for patients with chronic suppurative otitis media: Italian adaptation of "Chronic Ear Survey". Acta Otorhinolaryngol Ital. 2017;37(1):51–57.

12 Baumann I, Kurpiers B, Plinkert PK, Praetorius M. Development and validation of the Chronic Otitis Media Outcome Test 15 (COMOT-15). Measurement of health-related quality of life in patients with chronic otitis media. HNO. 2009; 57(9): 889-95.

13 Bukurov B, Arsovic N, Grujicic SS, Haggard M, Spencer H, Marinkovic JE. Psychometric characteristics of the chronic Otitis media questionnaire 12 (COMQ - 12): stability of factor structure and replicability shown by the Serbian version. 2017;15(1):207.

14 Prabhu P, Ganeshan A, Anusha C, Jose A, Kiruthika L. Health-related quality of life measurement in individuals with chronic suppurative otitis media: A South Indian perspective, Hearing, Balance and Communication. 2017;15(3):156-160.

15 Mohite AA, Mane RS, Patil BC, Mohanty RM. Complications of chronic suppurative otitis media and their management: five-year study at tertiary care centre. International Journal of Otorhinolaryngology and Head and Neck Surgery. *2019;5*(4):900-905.

16 Kandakure VT, Khokle PD, Shah UR. Management of unsafe type of chronic suppurative otitis media with extracranial complications at a tertiary care center. Indian J Otol. 2018; 24(2):129-34.

A. *Intratemporal and extracranial*

1. Mastoiditis
2. Petrositis
3. Facial paralysis
4. Labyrinthitis
5. Bezold abscess
6. Zygomatic abscess.

B. *Intracranial*

1. Extradural abscess
2. Subdural abscess
3. Meningitis
4. Brain abscess
5. Lateral sinus thrombophlebitis
6. Otitic hydrocephalus

RED FLAGS[5]

1. Pain-It is uncommon in uncomplicated CSOM. Its presence is considered serious as it may indicate extradural, perisinus, or brain abscess. Sometimes, it is due to otitis externa associated with a discharging ear
2. Vertigo-It indicates erosion of lateral semicircular canal which may progress to labyrinthitis or meningitis. Fistula test should be performed in all cases
3. Persistent headache-It is suggestive of an intracranial complication
4. Facial weakness indicates erosion of facial canal
5. A listless child refusing to take feeds and easily going to sleep (extra dural abscess)
6. Fever, nausea and vomiting indicate intracranial infection
7. Irritability and neck rigidity suspect meningitis
8. Diploia (Gradeningo syndrome) petrositis
9. Postauricular swelling or tenderness, if present, suggests mastoiditis

PROGNOSIS [5,18]

It depends upon:

- Duration of the complaint
- Age of reporting the complaint
- Associated co-morbidities

MANAGEMENT

General management[17]

- Keep the ear dry. Avoid water entering the ear while bathing, swimming, and performing such activities with water.
- Aural toilet, keeping the chronically draining ear clean and dry as much as possible. Techniques include in-office mopping with cotton swabs, suctioning to remove discharge and debris, and placing an ear wick to stent open an oedematous canal.
- Detect hearing loss and manage accordingly.
- Managing weight and other co-morbidities which may maintain the condition for long period.
- Counseling to the parents: information regarding risk factors needs to be told to the parents; teaching the correct method of breast feeding and burping after meals.
- Treating upper respiratory tract infections in time.

Homoeopathic management

Homoeopathic management targets the patient suffering from CSOM, and medicine is selected based upon the presenting complaints, relevant past/family/personal/ treatment history, physical general & mental symptoms of the individual patient. Homeopathy for CSOM patients has been shown to be effective.[18,19]

In synthesis repertory[20], 88 medicines for CSOM are found in chapter EAR under the rubric 'Inflammation-media'. The frequently verified characteristic features of some organospecific remedies are: ***Dulcamara:*** Middle ear catarrh (otitis media, otorrhea). Worse from cold in general, damp weather, night. ***Kali sulphuricum:*** Eustachian deafness. Discharge of yellow matter (otorrhea). ***Thiosinaminum:*** Catarrhal deafness with cicatricial thickening. Subacute suppurative otitis media, formation of fibrous bands impending free movement of the ossicles.

The list of frequently prescribed polycrest medicines is given below:[21,22]

Medicines	General indications	Characteristic particulars
Aurum metallicum	*Worse in cold air, getting cold. Many complaints only in winter. Syphilitic affection of bones profound melancholy. Oversensitive to pain, smell, taste, hearing, touch*	• Caries of ossicula and mastoid • Obstinate and foetid otorrhea after scarlatina • External meatus bathed in pus • Pain worse at night and drive to despair

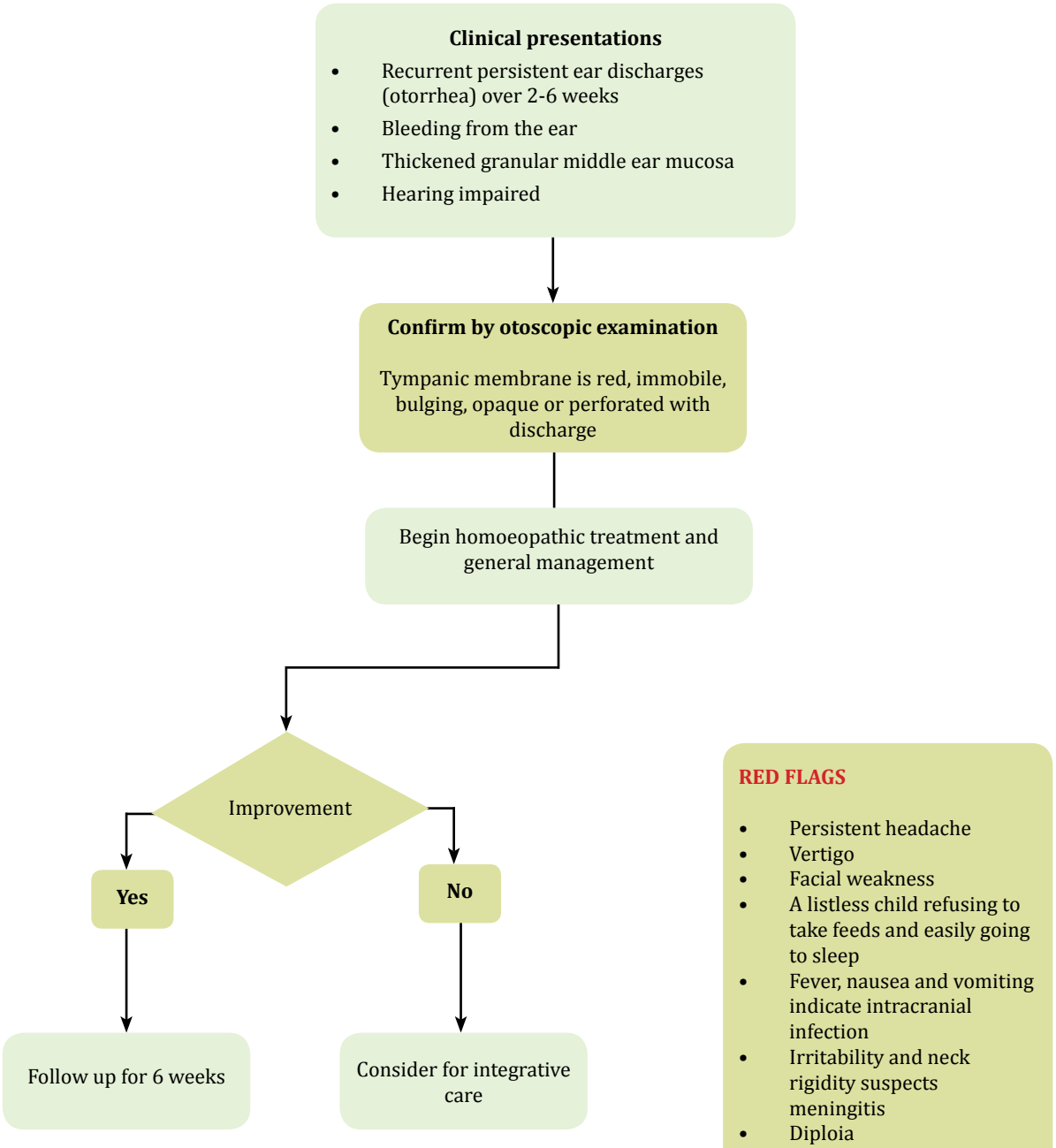
17 Standard treatment guidelines, Armed Forces Medical College. Pune: Excell Prints;2007: 107-112.
18 Hasan, N., Ahmed, S., Zaman, S., Ferdousi, S., Khaleque, M. A., & Bari, L. CSOM Causing Tympanic Membrane Perforation and Impaired Hearing: Improved by Homeopathy. Journal of Advances in Medicine and Medical Research. 2017;21(2):1-9.
19 Panchajani R. A clinical study on miasmatic approach in management of patients with chronic suppurative otitis media[dissertation]. Kulasekharam, Tamil nadu: Sarada Krishna Homoeopathic Medical College;2019[cited 2021 March 19]. Available from: http://repository-tnmgrmu.ac.in/10745/
20 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002
21 Boericke W. Boericke's New Manual of Homeoeopathic Materia Medica with Repertory: third revised & Augmented Edition Based on Ninth edition. New Delhi: B. Jain publishers(P)Ltd.: 2007.
22 Allen HC. Allen's Keynotes- Rearranged and classified with leading remedies of the Materia Medica and bowel nosodes. 10th Reprint edition. New Delhi: B. Jain Publishers (P) Ltd;2006.

Medicines	General indications	Characteristic particulars
Calcarea Carbonica	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated*	• Scrofulous inflammation with mucopurulent otorrhea and enlarged glands • Perversion of hearing, hardness of hearing • Polyps which bleed easily • Worse from cold in every form, water, washing, moist air, wet weather • Better in dry climate and weather, lying on painful side
Causticum	*Chilly patient. Burning, rawness and soreness are characteristic. Intensely sympathetic. Paralysis of single part. Aversion to sweets. Better damp, wet, weather*	• Ringing, roaring, pulsating noises with deafness • Words and steps re-echo • Chronic otitis media • Accumulation of ear wax. • Worse in dry, cold winds, in clear fine weather, cold air, from motion of carriage • Better from warmth
Capsicum annuum	*Persons with light hair, blue eyes, nervous but stout and plethoric habit. Home sickness. Burning and smarting sensation, as from cayenne pepper. General uncleanliness of the body. Marked thirst; but drinking causes shuddering. Worse open air, uncovering*	• Burning, stinging in ears, swelling and pain behind the ears-inflammation of mastoid • Tenderness over the petrous bone extremely sore and tender to touch (caries) • Otorrhea and mastoid disease before suppuration • Better from heat
Hepar sulph	*Extremely chilly patient; hypersensitive (to cold, pain), Faints easily; scrawny; Glandular constitution; Profuse sweat; Irritable; difficult to please, slow to act*	• Discharges of fetid pus from the ears (Otorrhea) • Whizzing and throbbing in ears, with hardness of hearing (Tinnitus) • Mastoiditis. Sensitive to touch and draft • Worse from dry cold winds, cool air, lying on painful side • Better in damp weather, from wrapping head up, from warmth
Kali bichromicum	*Chilly patient. Susceptible to cold, fat, chubby, short necked, shifting pains* *Aversion and intolerance to meat, desires sour things. Worse from cold, open air, hot weather; Better from motion, pressure*	• Swollen, with tearing pains (otitis),sharp stitches in the left ear • Thick, yellow, stringy, fetid discharges (otorrhea) • Perforation of the septum • Polypus • Better from heat

Medicines	General indications	Characteristic particulars
Lycopodium clavatum	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4- 8 pm; right-sided complaints or symptoms shifts from right to left; desire for warm foods and drinks, sweet; dominating, cranky, lack of self- confidence, precocious*	• Thick yellow offensive discharges • Otorrhraea and deafness with or without tinnitus; after scarlatina • Humming and roaring with hardness of hearing • Every noise causes a peculiar echo in the ear • Worse from heat or warm room, hot air • Better by motion, after midnight, on getting cold, from being uncovered
Mercurius solubilis	*Sensitive to changes of temperature Profuse offensive perspiration Tongue flabby with imprint of teeth. Increased salivation Increased thirst for large quantity of water. Worse at night, in wet damp weather*	• Thick, yellow discharges, fetid, bloody (otorrhea) • Otalgia, sticking pains • Worse from warmth of bed, at night
Psorinum	*Extremely chilly patient, wants to cover even in hottest summer weather; pale, delicate, sickly; scanty perspiration; offensive discharges; wakes up at night feeling hungry; anxious, fearful, child is good all day while restless and troublesome at night*	• Raw, red, oozing scabs around the ears • Sore pain behind the ears • Chronic otorrhea • Very fetid pus from ears, brownish, offensive • Worse from changes of weather, in hot sunshine, from cold. • Better from heat, warm clothing, even in summer
Pulsatilla nigricans	*Hot patient; marked changeability of symptoms; aversion to fatty foods, warm foods and drinks, dislikes butter; thirstless with great dryness of mouth; tongue coated yellow or whitish; worse towards evening and in warm room, better in open air, by slow, gentle motion and cold applications; desire for company, mild, gentle, affectionate, yielding, weeping disposition*	• Sensation as if something was being forced outward • Hearing difficult, as if the ear were stuffed. Diminished acuteness of hearing • Otorrhea. Thick, bland discharge; offensive odor. Catarrhal Otitis • Otalgia, worse at night. • Worse from heat, lying on left or on painless side
Silicea terra	*Extremely chilly patient; all symptoms worse by cold except stomach complaints, which are ameliorated Profuse, offensive discharges; sweats profusely especially on feet Easy suppuration; glandular affinity; large head and distended abdomen; weak ankles, slow in learning to walk; constipation. Obstinate, head strong, cries when spoken kindly to, nervous, apprehensive, Oversensitive, irritable and fearful*	• Fetid discharge (otorrhea) • Caries in the mastoid • Loud-pistol-like retort • Sensitive to noise • Roaring in ears (tinnitus) • Worse in morning, from washing, during menses, uncovering, lying down, damp, lying on, left side • Better from warmth, wrapping up head, summer, in wet or humid weather

Medicines	General indications	Characteristic particulars
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sit stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve*	• Whizzing in ears (tinnitus) • Bad effects from the suppression of otorrhea • Deafness preceded by exceedingly sensitive hearing • Catarrhal deafness • Worse at rest, warmth in bed, washing, bathing, in morning, night, periodically • Better in dry, warm weather, lying on right side
Tellurium metallicum	*Worse at night, cold weather lying on painful side, touch. Offensive discharge slow development of symptoms*	• Catarrh of middle ear • Discharge acrid, smell like fish pickle. Itching, throbbing. Swelling in meatus, deafness • Worse on coughing, laughing
Thuja occidentalis	*Chilly patient; with illusions & fixed ideas. Unhealthy skin with tendency for warty growths; oily/ greasy sweat, face and stool; perspiration on uncovered parts. Complaints worse from cold, warm air and damp humid atmosphere and chronic complaints better during a cold*	• Chronic Otitis; discharge purulent (otorrhea) • Creaking when swallowing • Polypi • Worse at night, from heat of bed, vaccination. • Better on left side
Tuberculinum	*When Psorinum, sulphur, best selected remedy fails to relieve or permanently improve. Takes cold easily. Symptoms ever changing*	• Persistent offensive otorrhoea • Perforation in membrane tympani with ragged edges • Worse from motion, music, dampness, early morning, and after sleep • Better in open air

ALGORITHM OF TREATMENT PROCESS FOR CSOM


Clinical presentations
Recurrent persistent ear discharges (otorrhea) over 2-6 weeks
Bleeding from the ear
Thickened granular middle ear mucosa
Hearing impaired
Confirm by otoscopic examination
Tympanic membrane is red, immobile, bulging, opaque or perforated with discharge
Begin homoeopathic treatment and general management
Improvement
Yes
No
Follow up for 6 weeks
Consider for integrative care

RED FLAGS

- Persistent headache
- Vertigo
- Facial weakness
- A listless child refusing to take feeds and easily going to sleep
- Fever, nausea and vomiting indicate intracranial infection
- Irritability and neck rigidity suspects meningitis
- Diploia
- Mastoiditis (if there is postauricular swelling or tenderness)

CHAPTER 9

DIABETIC FOOT ULCER

DIABETIC FOOT ULCER

CASE DEFINITION[1]

Diabetic foot ulcer (DFU) is defined as a foot affected by ulceration that is associated with neuropathy and /or peripheral arterial disease of the lower limb in a patient with diabetes mellitus(DM).

INCIDENCE/PREVALENCE[2,3,4]

- Global prevalence of diabetic foot is 6.3%. It is usually more prevalent in males than in females, and more prevalent in type 2 diabetics than in type 1 diabetics.
- Diabetic foot is found to be more prevalent in diabetic patients who are old, have a low body mass index, long duration of diabetes mellitus, and have more hypertension, diabetic retinopathy, and smoking history.

ETIOPATHOGENESIS[5,6,7]

Diabetic neuropathy is the common factor in almost 90% of diabetic foot ulcers. Nerve damage in diabetes mellitus affects the motor, sensory, and autonomic fibers. Motor neuropathy causes muscle weakness, atrophy, and paresis. Sensory neuropathy leads to loss of the protective sensation of pain, pressure, and heat. Autonomic dysfunction causes vasodilation and decreased sweating, resulting in loss of skin integrity, providing a site vulnerable to microbial infection. Even minor injuries, especially when complicated by infection, increase the demand for blood in the foot, and an inadequate blood supply may result in foot ulceration, potentially leading to limb amputation. The majority of foot ulcers are of mixed etiology (neuroischemic), particularly in older patients.

RISK FACTORS[8,9]

The following factors increase the risk of DFU or amputation in the patients:

- Previous amputation
- Previous history of DFU
- Peripheral neuropathy
- Foot deformity
- Diabetic nephropathy specially end stage renal disease

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1 Alexiadou K, Doupis J. Management of Diabetic Foot Ulcers. Diabetes Ther. 2012; 3(1): 4.
2 Zhang P, Lu J, Jing Y, Tang S, Zhu D, Bi Y. Global epidemiology of diabetic foot ulceration: a systematic review and meta-analysis. Journal Annals of Medicine. 2017;49(2):106-116.
3 Tesfaye S, Stevens LK, Stephenson JM, Fuller JH, Plater M, Ionescu-Tirgoviste C, et al. Prevalence of diabetic peripheral neuropathy and its relation to glycaemic control and potential risk factors: the EURODIAB IDDM Complications Study. Diabetologia. 1996;39(11):1377–1384.
4 Kumar S, Ashe HA, Parnell LN, Fernando DJ, Tsigos C, Young RJ, et al. The prevalence of foot ulceration and its correlates in type 2 diabetic patients: a population-based study. Diabet Med. 1994;11(5):480–484.
5 Bowering CK. Diabetic foot ulcers. Pathophysiology, assessment, and therapy. Can Fam Physician. 2001; 47:1007–1016.
6 Prompers L, Huijberts M, Apelqvist J, Jude E, Piaggesi A, Bakker K, et al. High prevalence of ischaemia, infection and serious comorbidity in patients with diabetic foot disease in Europe. Baseline results from the Eurodiale study. Diabetologia. 2007; 50:18–25.
7 Boulton AJ. The diabetic foot: grand overview, epidiomology and pathogenesis. Diabetes Metab Res Rev. 2008;24(1): 3-6.
8 Ahmad W, Khan IA, Ghaffar S, Al-Swailmi FK, Khan I. Risk factors for diabetic foot ulcer. J Ayub Med Coll Abbottabad.2013;25(1-2):16-8.
9 Iraj B, Khorvash F, Ebneshahidi A, Askari G.Prevention of diabetic foot ulcer.Int J Prev Med. 2013;4(3):373-6.

- Poor glycemic control
- Cigarette smoking
- Prolonged duration of diabetes mellitus
- Peripheral arterial disease
- Higher grades of diabetic foot
- Evidence of osteomyelitis

CLASSIFICATION

Several classification systems have been used.[10,11,12,13,14,15,16,17] These include:

- Wagner-Megitt Classification *(widely accepted and externally validated)*
- University of Texas Classification *(widely accepted and externally validated)*
- SINBAD - Site, Ischemia, Neuropathy, Bacterial Infection, Area and Depth *score (externally validated)*[1]
- WIFI - The Wound Ischaemia and Foot Infection classification *(externally validated)*[1]
- King's Classification
- DUSS - Diabetic Ulcer Severity Score[1]
- PEDIS Classification
- Amit Jain's Classification

However, the International Working Group on the Diabetic Foot (IWGDF) recommended guidelines and classifications in 2019 which are widely accepted. These are Wagner- Meggit, University of Texas, SINBAD and WIfI out of which SINBAD is the most practical system of classification to be implemented.[18]

DIAGNOSIS

A good history and physical examination can clinch the diagnosis. It includes duration of DM, neuropathic and peripheral vascular disease symptoms, previous ulcers or amputations and any other complication of DM like retinopathy or nephropathy.

10 Wagner FW. The dysvascular foot: a system for diagnosis and treatment. Foot and Ankle.1981;2(2): 64-122.
11 Calhoun JH, Jeff Cantrell J, Cobos J, Lacy J, Valdez RR, Hokanson J, et al. Treatment of Diabetic Foot Infections: Wagner Classification, Therapy, and Outcome. foot and ankle.1988; 9(3):101-106.
12 Lavery LA, Davis KE, Berriman SJ, Braun L, Nichols A, Kim PJ, et al. WHS guidelines update: Diabetic foot ulcer treatment guilelines. Wound repair and regeneration. 2016; 24(1):112-126.
13 Foster A, Edmonds M. Simple staging system: a tool for diagnosis and management. Diabet Foot.2000; 3(2):56-62.
14 Game F. Classification of diabetic foot ulcers. Diabetes Metab Res Rev. 2015;32 (Suppl 1):186-194.
15 Schaper NC. Diabetic foot ulcer classification system for research purposes: a progress report on criteria for including patients in research studies. Diabetes Metabolism Research and Reviews. 2004;20(S1):590-595.
16 Tentolouris N. Introduction. In: Katsilambros N, Eleftherios D, Konstantinos M, Tentolouris N, Panagiotis T, editors. Atlas of the diabetic foot. 2nd ed. Singapore: John Wiley & Sons ltd.; 2010:1-10.
17 Jain AKC. "A new classification of diabetic foot complication: a simple and effective teaching tool". Journal of Clinical and Diagnostic Research. 2014;8(12): NC07-NC09.
18 Schaper NC, Netten JJV, Apelqvist J, Bus SA, Hinchliffe RJ, Lipsky BA, IWGDF Editorial Board. Practical guidelines on the prevention and management of diabetic foot disease (IWGDF 2019 update). Diab Metab Res Rev. 2020; 36(S1): e3266

Physical examination

- The foot ulcer needs to be examined carefully in terms of location, size, shape, depth, base and margins; also in terms of perception of superficial pain (pinprick), temperature sensation (using a two-metal rod), light sensation (using the edge of a cotton-wool twist), pressure (using the Semmes–Weinstein 5.07 monofilament) and the vibration perception using a tuning fork and/or a biothesiometer. The examination of position sense (proprioception) and deep tendon reflexes (Achilles tendon, patellar) is also essential.[19]
- The foot should be carefully inspected for abnormalities like dry skin, fissures, deformities, and callosities. An increase in temperature might suggest inflammation (redness, warmth, tenderness, purulent secretions and fever). [20]
- The location, size, shape, depth, base and margins of the ulcer should be examined clinically. Diagnosing a soft tissue infection in patient with diabetes is sometimes difficult, as the signs of inflammation of the overlying ulcer may be absent.[21]
- Palpation of foot pulses is crucial in the diabetic foot. The assessment of the femoral and popliteal pulses is equally important, because without sufficient inflow into the leg, neuro-ischaemic ulceration remains a high risk. If either the dorsalis pedis pulse or the posterior tibial pulse can be felt, then significant ischemia of the foot is unlikely. Checking both feet for increased temperature is also important. Warm or hot areas may indicate infection, a fracture or acute Charcot foot.[17]

Different ways of measuring the wound (ulcer)[22,23]

- *Simple wound measurement:* This is a crude measurement. Surface wound area is calculated by multiplying the maximum perpendicular length by the maximum width of the wound bed and is typically recorded in cm.[2]
- *Wound planimetry:* This measurement can be carried out using a mechanical planimeter or by using an appropriate software package and a digital image.
- *Stereo photogrammetry and light techniques:* The advantages of digital imaging are that it facilitates unique calibration at each wound measurement and subjective wound tracing is eliminated.

19 Makrilakis K. Diabetic neuropathy. In: Katsilambros N, Eleftherios D, Konstantinos M, Nicholas T, Panagiotis T, editors. Atlas of the diabetic foot. 2nd ed. Singapore: John Wiley & Sons ltd. 2010: 11-20.
20 Armstrong DG, Holtz-Neiderer K, Wendel C, Mohler MJ, Kimbriel HR, Lavery LA. Skin temperature monitoring reduces the risk for diabetic foot ulceration in high-risk patients. Am J Med 2007;120(12): 1042-1046.
21 Tudhope L. The Diabetic foot recognition and principles of management. CME. 2009;27(7):312-16.
22 Flanagan M. Wound Measurement: can it help us to monitor progression to healing?. Journal of Wound Care. 2003;12(5):189-194.
23 Lagan KM, Dusoir AE, McDonagh SM, Baxter GD. Wound Measurement: The comparative reliability of direct versus photographic tracings analysed by planimetry versus digitising techniques. Archives of Physical Medicine and Rehabilitation. 2000; 81(8):1110-1116.

INVESTIGATIONS[24,25,26]

- Vascular investigations - Colour Doppler of the affected lower limb
- Radiological investigations - X-ray of the affected foot to rule out osteomyelitis
- Neurological investigations - Nerve conduction tests
- Laboratory tests - Blood sugar levels (FBS & PPBS), Glyosylated Hemoglobin (HbA1c), Vitamin B12 levels

DIFFERENTIAL DIAGNOSIS[27]

- **Vascular** - Venous, Arterial, Lymphatic, Vasculitis
- **Metabolic** – Gout
- **Connective tissue diseases** – Inflammatory bowel disease, Pyoderma gangrenosum, Rheumatoid arthritis, Scleroderma, SLE, Bullous Pemphigoid, Dermatomyositis, Polyarteritis nodosa, Leucocytoplastic vasculitis
- **Cutaneous micro thrombotic ulcers** – Cryofibrinogenemia, Antiphospholipid syndrome, Coagulopathies
- **Hematological disease** – Sickle cell disease, Red blood cell disorders, White blood cell disorders, Leukemia, Platelet disorders, Thrombocytosis, Thalassemia
- **Neoplastic** – Basal cell carcinoma, Squamous cell carcinoma, Malignant melanoma, Primary cutaneous B-cell lymphoma, Marjolin's ulcer, Kaposis sarcoma, Intraepidermal carcinoma
- **Panniculitis** – Necrobiosis lipoidica
- **Traumatic** – Pressure ulcer, Radiation damage
- **Iatrogenic** – Drugs

EVALUATION AND ASSESSMENT[1,5,28,29,30]

- Ankle-Brachial Pressure Index (ABPI)
- Diabetic peripheral neuropathy
- Neuropathy Disability Score (NDS)
- Diabetic Foot Ulcer Assessment scale
- Wagner- Meggitt's classification

24 Lobmann R, Kayser R, Kasten G, Kasten U, Kluge K, Neumann W, et al. Effects of preventative footwear on foot pressure as determined by pedobarography in diabetic patients: a prospective study. Diabet Med. 2001;18(4): 314-319.

25 Mayfield JA, Sugarman JR. The use of the Semmes-Weinstein monofilament and other threshold tests for preventing foot ulceration and amputation in persons with diabetes. J Fam Pract. 2000;49(11): 17-29.

26 Rogers LC, Frykberg RG, Armstrong DG, Boulton AJM, Edmonds M, Van GH, et al. The Charcot Foot in Diabetes. Diabetes Care. 2011; 34(9): 2123–2129.

27 Lautenschlager S, Eichmann A. Differential diagnosis of leg ulcers. In: Hafner J, Ramelet A-A, Schmeller W, Brunner UV, editors. Management of leg ulcers. Current Problems in Dermatology, vol. 28. Basel, Switzerland: S. Karger AG;1999:257-270.

28 Nayak C, Singh V, Singh K, Singh H, Gupta J, Ali MS, et al. A prospective observational study to ascertain the role of homeopathic therapy in the management of diabetic foot ulcer. Indian Journal of Research in Homoeopathy. 2012;6(1,2):22-31.

29 Wukich DK, Raspovic KM. Assessing Health-Related Quality of Life in Patients with Diabetic Foot Disease: Why Is It Important and How Can We Improve?2017 Roger E. Pecoraro Award Lecture. Diabetes Care. 2018;41(3):391-397.

30 Jain AK. A new classification of diabetic foot complications: a simple and effective teaching tool. The Journal of diabetic foot complications.2012;4(1):1-5.

COMPLICATIONS[31]

- Wet gangrene
- Abscess
- Tinea pedis
- Osteomyelitis
- Cellulitis
- Necrotizing fasciitis

PREVENTION[9]

Diabetes mellitus is a chronic metabolic disease, which affects the vascular system extensively throughout the body. The metabolic complications of DM should be treated concomitantly with no bias in treating one metabolic complication over others. The metabolic diseases secondary to DM should be controlled and the target values should be kept below the recommended standard. As a result, the preventive measures should be taken in order to control the neuropathy and Peripheral artery disease, which are the main causes of DFU. The preventive measures and management of diabetic complications consist of the following:

- Lifestyle modifications
- Blood pressure control
- Lipid management
- Glycemic control
- Smoking cessation
- Annual comprehensive foot examination

Nail and skin care

- Diabetic patients should examine their feet daily. The maceration especially between the toes is usually caused by fungal infection and should be observed carefully. It is recommended to use a mirror in order to better observe the plantar surface of the foot. In case, if the diabetic patient's vision is compromised due to retinopathy or the patient is unable to perform the daily examination of own feet, another individual who is fully trained should do the task for the patient.
- The feet should be washed and dry at least once a day. It is important to dry spaces between the toes very carefully.
- The temperature of the water used for rinsing the foot should be less than 37 centigrade. It is recommended to use the elbow or forearm in order to estimate the temperature of water. This method helps to prevent accidental burning of the extremities due to characteristic glove stocking neuropathy in diabetic patients.
- The diabetic patients, especially the ones with sensory neuropathy, should not use the heating pads over their bodies. It is also recommended to warn the patients not to place their feet close to the heaters during winter.

31 Jain ACK. Type 1 diabetic foot complications. The Journal of Diabetic Foot Complications. 2016;8(1):17-22.

- All the patients especially those with diabetic neuropathy or high risk diabetic foot should use footwear both indoors and outdoors. It is recommended to wear special shoes with adequate size when the patient is walking indoor on the carpet. The use of the shoes without stockings in diabetic patients should be discouraged. In patients with neuropathy, it is also recommended to use the footwears with enclosed frontal part in order to prevent the minor trauma to the fore foot.
- It is recommended to observe and physically examine inside the patient's shoes on a daily basis. This recommendation is given to detect any external objects inside the shoes and to look for pressure effect on different surfaces of the patient's feet. The lateral engorgement of the shoes is an indication of pressure exerted by the first and fifth metatarsals.The swelling observed in the frontal part of the shoes is caused by the pressure of distal phalanges of the first digit.
- Diabetic patients, due to autonomic neuropathy, present with increased perspiration in the upper body and decreased perspiration in lower extremity. As a result, the dryness of the plantar surfaces of the feet and heels is common. The minor trauma combined with the dry skin creates cracks which facilitate the entrance of microorganisms into the skin and consequently foot infection is inevitable. It is recommended to apply lubricants containing urea or salicylates which can penetrate the dry and hyperkeratosis skin. However, the use of lubricants in the inter-digital spaces is discouraged.
- In diabetic patients, it is recommended to change and put on clean socks daily.
- The patients should be discouraged wearing tight socks and the seams should be towards outside.It is not advisable to wear stockings up to the knees.
- Especially in female diabetics, any kind of manipulation of the nails is not recommended. The nails should not be cut in a rounded fashion.
- The patient should not use any kind of chemical substances or commercial pads or plasters in order to treat the calluses of the feet.

RED FLAGS[32]

- Sepsis or acutely unwell due to infection
- Critical lower limb ischaemia with necrosis, pain or ulceration
- Suspected acute limb ischaemia
- Rapidly deteriorating ulceration or necrosis

MANAGEMENT

General management[12,18,33]

Standard care for DFU is provided by ensuring glycemic control, adequate perfusion, local wound care, regular debridement, off-loading of the foot, control of infection and management

32 NHS Devon CCG. Diabetes Footcare Guidelines [Internet].2015[cited 2020 March 7]. Available from: https://northeast.devonformularyguidance.nhs.uk/referral-guidance/northern-locality/endocrinology/diabetes-footcare-pathway

33 Lipsky BA, Berendt AR. Hyperbaric Oxygen Therapy for Diabetic Foot Wounds. Diabetes Care. 2010; 33(5): 1143–1145.

of comorbidities. All the diabetic patients should undergo comprehensive foot examination once a year. The goal of this examination is to determine the risk factors that may result in foot ulcer and consequently amputation of the affected organ.

Foot care

i) Shake and wipe shoes from inside before they are worn
ii) Shoes (with closed toes)to be worn at all times, indoors and out to avoid injury
iii) Socks to be changed every day
iv) Shoes to be designed and fitted by a footwear specialist

Non-pharmacological treatment

Hyperbaric Oxygen (HBO) has been found to be a useful adjunctive therapy for DFUs and is associated with decrease in amputation rates.

Homoeopathic management

Diabetic foot ulcer is the result of multiple factors preceding over a period. Homoeopathic remedy selection should be based on totality of symptoms including characteristic particulars related to ulcer.

Research studies have shown that patients with diabetic foot ulcer and some cases of gangrene have improved under homoeopathic treatment.[34,35,36,28] Synthesis repertory[37] contain more than 50 medicines under rubric "Ulcer-foot" and the Ulcer rubric in skin section contain number of sub-rubrics which characterizes the ulcer.

The frequently verified characteristic features of some organospecific remedies are: ***Anthracinum:*** Ulceration, sloughing, and intolerable burning. When Arsenic or best selected remedy fails to relieve the burning pain of ulcer. ***Graphites:*** Ulcers discharging a glutinous fluid, thin and sticky. ***Tarentula cubensis:*** Senile ulcers. Pain and inflammation predominate. Burning and stinging pain with purplish hue, prostration. Intermittent septic chills. ***Mezereum:*** Ulcer itch and burn, surrounded by vesicles and shining, fiery red areola. Ulcers with thick, yellowish white scabs, under which thick yellow pus collects. ***Calendula officinalis*** mother tincture can be used for regular dressing of the ulcer for maintaining hygiene and to prevent any superadded infections.

34 Ali MS, P Hima Bindu. A Case of Diabetic Foot Gangrene. Indian J Res Homoeopathy. 2007; 1(1):42-51.
35 Ali M S, P Hima Bindu. A Case of Diabetic Foot Ulcer: Homoeopathic Treatment could avoid Amputation. The Homoeopathic Heritage. 2009; 34(8):35-38.
36 Mahesh S, Mallappa M, Vithoulkas G. Five case studies of gangrene, preventing amputation through Homoeopathic therapy. Indian J Res Homoeopathy;2015.9(2):114-22.
37 Schroyens F. Synthesis Repertory Ver. 9.1. New Delhi : B Jain Publishers Pvt. Ltd; 2002

The list of frequently prescribed polycrest medicines with their indications are given below:[38,39,40]

Medicines	General Indications	Characteristic particulars
Arsenicum album	*Chilly patient; rapid disproportionate prostration; burning pains better by heat (except headache); cadaveric odour of discharges and body; anxiety; anguish, fear of death and restlessness*	• Skin dry, ulcers hard on the edges • Stinging, burning with proud flesh, turning black, flat, pus thin, ichorous suppuration,fetid smell,bleeding, putridity and bluish-green colour of the ulcers • Want of secretion in the ulcers. Ulcers in a form of wart. • Swelling of the foot with burning, hard, shining with burning vesicles of blue-blackish colour on the instep. • Corrosive and ulcerous vesicles on the soles of the feet and on the toes. Fatigue in legs and feet • Worse in wet weather, from cold, seashore, right-side
Calcarea carbonica	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets; aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated*	• Flaccidity of the skin. Skin excoriated in several places, unhealthy, every injury tends to ulceration, even small wounds suppurate and do not heal • Ulcers deep fistulous, carious. Ulcers with too little pus • Cramps in calves of legs, soles of feet and toes chiefly on extending the legs • Burning in soles of feet. Coldness and numbness of feet especially at night in bed • Worse from ascending, cold in every form, water, washing, moist air, wet weather, standing • Better in dry climate and weather, lying on painful side
Carbo vegetabilis	*Chilly patient; distintegration and imperfect oxidation is the keynote of the remedy; patient may be almost life less, but the head is hot; coldness, breath cool, pulse imperceptible, oppressed and quickened respiration, and must have air, must be fanned hard very closely; Persons who have never fully recovered from the effects of some previous illness; aversion to darkness; Fear of ghosts; Sudden loss of memory*	• Painless ulcers of the fingers and toes. Fetid ulcers with burning pains and discharge of corrosive and bloody pus • Torpor and insensibility of legs and feet. Aneurism in hamstring muscles with tensive pain and pulsation. Cramps in legs and soles of feet especially at night. Perspiration of the feet • Redness and swelling of the toes with shooting pain as if they had been frozen. • Senile gangrene which begins in toes and extends upwards. Affected parts are bluish • Worse in open air,warm damp weather • Better from cold

38 Boericke W. Boericke's New Manual of Homoeopathic Materia Medica with Repertory: Third Revised & Augmented Edition based on Ninth Edition. New Delhi: B. Jain Publishers (P) Ltd.;2007.

39 Allen HC. Keynotes and Characteristics with Comparisons of some of the Leading Remedies of the Materia Medica. New Delhi: B. Jain Publishers(P) ltd.;2007.

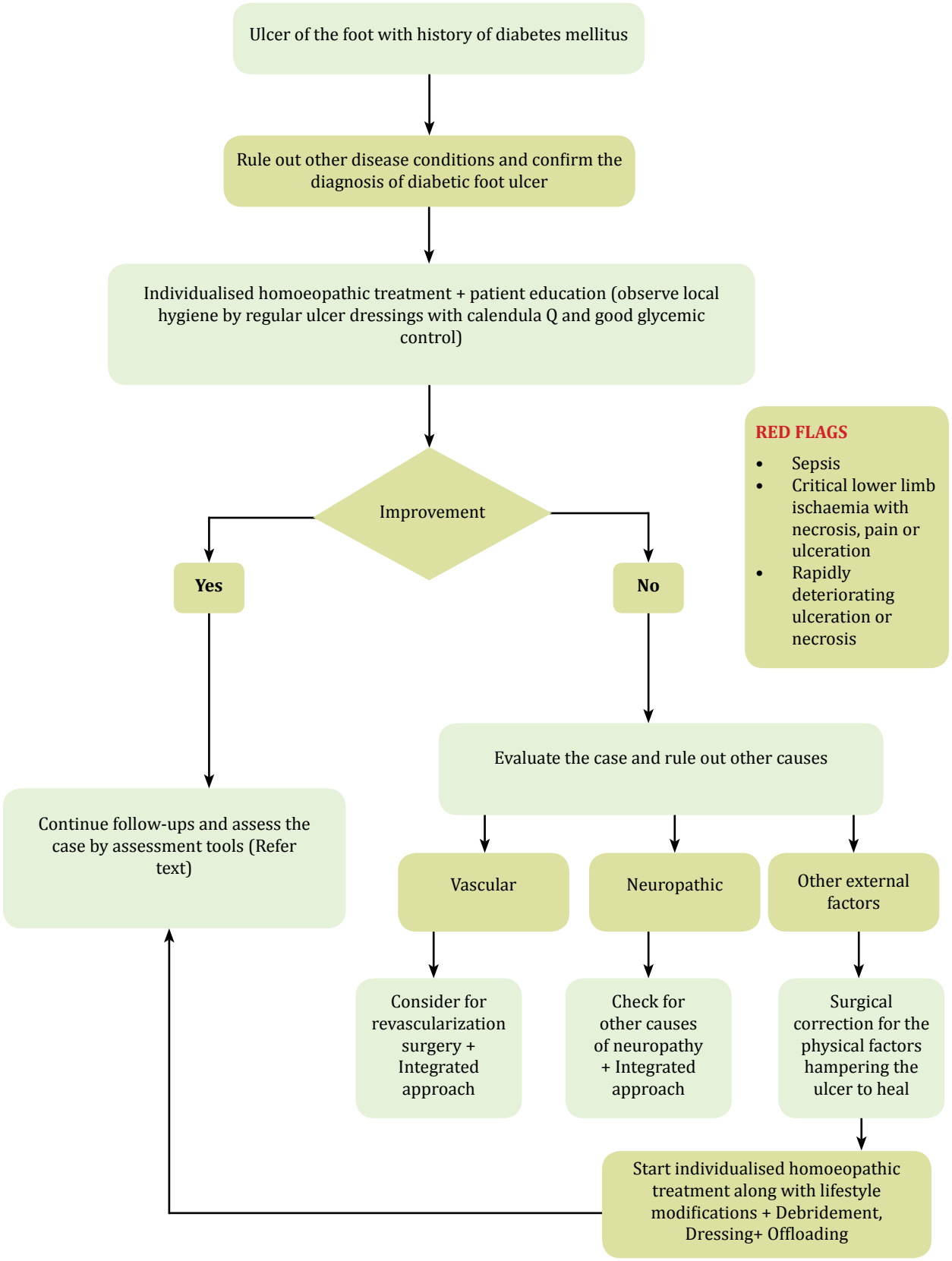
40 Clarke JH. A Dictionary of Practical Materia Medica.1st Reprint edition. New Delhi: B. Jain Publishers(P) ltd.;2005.

Medicines	General Indications	Characteristic particulars
Kali bichromicum	*Chilly patient; susceptible to cold, fat, chubby, short necked, shifting pains; aversion and intolerance to meat; desires sour things; worse from cold, open air, hot weather, better from heat*	• Ulcer dry, oval, have an overhanging edges, a bright red inflammed areola, hard base, movable on subjacent tissues, dark spot in the center, after healing the cicatrix remain depressed • Ulcers corrode and become deeper without spreading in circumference • Punched out deep ulcers with regular edges. Ulcers especially painful in cold weather. Ulcers on previously inflammed feet • Worsen from undressing
Lachesis mutus	*Hot patient; thin and emaciated; hemorrhagic diathesis; great sensitiveness to touch; hot flushes and perspiration; Desires oysters, alcohol, farinaceous food, all complaints worse after sleep; loquacious, jumps from one idea to another; jealous, suspicious, indolent*	• Skin bluish or bluish-black or purplish around the ulcers. Hot perspiration • Ulcers surrounded by pimples, vesicles and other small ulcers • Ulcers with great sensitiveness to touch, uneven bottom, ichorous, offensive discharge when touched • Gangrenous ulcers, wounds with inflammatory fever, weak, quick and intermittent pulse • Worse on left side, in the spring, warm bath, pressure or constriction • Better from appearance of discharges, warm applications
Lycopodium clavatum	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi-dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4.00-8.00 pm; right sided complaints or symptoms shifts from right to left; desire for warm foods and drinks, sweets; dominating, cranky, lack of self-confidence, precocious*	• Skin ulcerates, tendency to become chapped • Mercurial ulcers, bleeding ulcers with shooting pains which burn while being dressed • Fistulous ulcers with callous, red edges, reversed and shining. Great dryness of the skin • Abscesses beneath skin worse warm applications • Worse from heat or warm room, hot air, bed • Better by motion,on getting cold, from being uncovered
Mercurius solubilis	*Sensitive to change of temperature; profuse offensive perspiration; tongue flabby with imprint of teeth; increased salivation, increases thirst for large quantity of water; worse at night, in wet damp weather*	• Skin is always moist and yellow in color. General tendency to free perspiration but patient is not relieved thereby • Ulcers irregular, spreading, shallow, bleeding, with burning on edges, hard and swollen on edges with bloody or corroding pus • Phagedenic and chancrous ulcers. Wounds ulcerate easily and become gangrened • Worse from lying on right side, from perspiration, warm room and warm bed

Medicines	General Indications	Characteristic particulars
Nitric acid	*Seat of action of the remedy is outlets of the body where the mucous membrane and skin meet; sticking pain as from splinter; acts best on the dark complexioned and past middle life; Pains appear and disappear quickly; Persons who have chronic diseases and take cold easily and disposed to diarrhoea; Better from carriage riding*	• Complaints from punctured wounds. Wounds and ulcers with lancinations as by splinters or with burning pains especially when they are touched, and which bleed easily • Mercurial and carious ulcers. Ulceration of bones and rachitis • Ulcers with sanious, sanguineous and corrosive suppuration. • Limbs become cold and as if frozen in a moderately old temperature • Worse from cold climate,hot weather
Phosphorus	*Tall, fast growing child with tendency to stoop; haemorrhagic tendency; chilly patient; craving for salt, cold foods and drinks; oversensitive to external impressions; Nervous and affectionate, anxious especially during thunderstorm*	• Burning sensation in legs and feet. Ulcers on legs with surrounding small pustules. Paralytic feeling in feet.Numbness of tips of toes. • Pain as from ulceration in soles when walking. Shocks in feet day and night before going to sleep • Pale skin • Fistulous ulcers. Large ulcers surrounded by small ones. Ulcers bleed on appearance of menses • Bruised pain in periosteum of tibia and gangrenous periosteum of tibia • Worse from touch, change of weather, from getting wet in hot weather, lying on left or painful side, ascending stairs • Better from lying on right side, cold, open air, washing with cold water, sleep
Pulsatilla nigricans	*Hot patient; Marked changeability of symptoms; aversion to fatty foods, warm foods and drinks, dislikes butter; thirstlessness with great dryness of mouth; tongue coated yellow or whitish; worse towards evening and in warm room, better in open air, by slow, gentle motion and cold application; desire for company, mild, gentle, affectionate, yielding, weeping disposition*	• Pain as from subcutaneous ulceration in legs and soles of feet. Complaints are worse when hanging the feet down • Suppurating wounds with thick pus, too profuse and yellow • Shining redness, hardness and itching round ulcers with bleeding, shooting, burning and gnawing pains • Deep or fistulous ulcers where there is much swelling around • Inflamed or putrid ulcers. Varices in legs and feet • Worse from heat warm room, lying on left or on painless side when allowing feet to hang down • Better in open air, motion, cold applications

Medicines	General Indications	Characteristic particulars
Sepia	*Chilly patient; tall, thin built with yellow saddle across upper part of cheeks and nose, big belly; dry flabby skin. Predisposed to take cold at change of weather. Desire for sour food which aggravates. Cheerful, active when well but indifferent and quarrelsome when sick self-absorbed, sad, weeping and indolent*	• Ulcers on instep. Stiffness in heels and joints of feet, as from contraction • Pricking and burning sensation of feet. Tingling and numbness in soles of feet • Profuse or suppressed perspiration of feet. Stinging in the heels • Tension in tendoachilies. Ulcers on heel arising from corrosive vesicles. Indolent ulcers on joints and tips of toes. Deformity of toenails • Worse from washing, laundry-work, dampness, left side, after sweat, cold air, • Better from pressure, warmth of bed, hot applications, drawing limbs up, cold bathing, after sleep
Silicea terra	*Extremely chilly patient; all symptoms worse by cold except stomach complaints, which are ameliorated; profuse, offensive discharges; sweats profusely especially on feet; easy suppuration; glandular affinity; large head and distended abdomen; weak ankles, slow in learning to walk; constipation obstinate, head strong, cries when spoken kindly to, nervous, apprehensive, oversensitive, irritable and fearful*	• Every injury tends to suppurate and ulcerate. Small wounds heal with difficulty • Corrosive ulcer on heels with itching. Ulceration of great toe with shooting pain. In growing toenails • Abscess which does not break but burrow under the skin. Ulcers burning, scabby, indolent, when circumscribed with redness, very high, hard ulcers with proud flesh and corroding pus • Ulcers smell offensive. Cancerous ulcers, inflammation, softening and ulceration of bones • Worse from washing, uncovering, lying down, damp, lying on, left side • Better from warmth, wrapping up head, summer, in wet or humid weather
Sulphur	*Hot patient, kicks off the clothes at night; dirty, filthy, does not want to be washed; lean, thin, stoop shouldered; child who walks and sit stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve*	• Skin dry, rough, scaly with voluptuous itching- feels so good to scratch • Ulcers with elevated margins, surrounded by itchy pimples, red or bluish areola, bleeding readily, and secreting a fetid and sanious or yellow thick pus • Fistulous ulcers, proud flesh in the ulcers. Burning sensation in feet, wants to find a cool place for them, puts them out of bed • Worse at rest, when standing, warmth in bed, washing, bathing,periodically • Better in dry, warm weather, lying on right side, from drawing up affected limbs
Secale cornutum	*Hot patient, anaemia, coldness, numbness, petechiae, mortification and gangrene, useful in old people with shrivelled skin-thin, scrawny old women, excessive appetite and thirst, craves acids, excessive smokers*	• Skin shrivelled, mottled, dusky-blue tinge • Dry gangrene, developing slowly • Varicose ulcers, burning sensation, better by cold • Skin feels cold to touch yet covering is not tolerated • Great aversion to heat • Worse from heat, warm covering • Better from cold, uncovering, rubbing, stretching out limbs

ALGORITHM OF TREATMENT PROCESS FOR DIABETIC FOOT ULCER


Ulcer of the foot with history of diabetes mellitus
Rule out other disease conditions and confirm the diagnosis of diabetic foot ulcer
Individualised homoeopathic treatment + patient education (observe local hygiene by regular ulcer dressings with calendula Q and good glycemic control)
Improvement
Yes
No
RED FLAGS
Sepsis
Critical lower limb ischaemia with necrosis, pain or ulceration
Rapidly deteriorating ulceration or necrosis
Continue follow-ups and assess the case by assessment tools (Refer text)
Evaluate the case and rule out other causes
Vascular
Neuropathic
Other external factors
Consider for revascularization surgery + Integrated approach
Check for other causes of neuropathy + Integrated approach
Surgical correction for the physical factors hampering the ulcer to heal
Start individualised homoeopathic treatment along with lifestyle modifications + Debridement, Dressing+ Offloading

CHAPTER 10

DIABETIC NEUROPATHY

DIABETIC NEUROPATHY

CASE DEFINITION[1]

Diabetic neuropathy (DN) refers to various types of nerve damages associated with diabetes mellitus. DN encompasses multiple different disorders involving proximal, distal, somatic, and autonomic nerves. It may be acute and self-limiting or a chronic, indolent condition.

INCIDENCE/PREVALENCE[2,3,4]

- All types of diabetic patients—insulin dependent diabetes mellitus (IDDM), non-insulin dependent diabetes mellitus (NIDDM), and secondary diabetic patients—can develop neuropathy. The prevalence of neuropathy increases with the duration of diabetes mellitus.
- The prevalence of peripheral neuropathy is estimated to be between 6% and 51% among adults with diabetes depending on age, duration of diabetes, glucose control, and type 1 *versus* type 2 diabetes.
- Various epidemiological studies from India showed wide prevalence varying from 5 to 2400 per 10,000 population in different community studies. In rural settings, it is less frequent and comparable with studies from eastern and southern regions. However, urban studies showed higher rates. Prevalence of Peripheral neuropathy (PN) in diabetic patients ranges from around 10.5% to 32.2% in various studies across India.

AETIOLOGY AND RISK FACTORS[5]

Factors leading to the development of diabetic neuropathy are not understood completely; some of the most commonly associated factors are as follows:

- Prolonged duration of diabetes mellitus
- Increasing age of the patient
- HbA1c levels (higher the level greater the risk)
- Diabetic retinopathy cases
- Smoking
- BMI (higher the BMI greater the risk)
- Total cholesterol (TC) levels
- Triglycerides (TG) levels
- Cardiovascular risk factors.

1 Vinik A, Casellini C, Nevoret ML. Diabetic Neuropathies. [Updated 2018 Feb 5]. In: Feingold KR, Anawalt B, Boyce A, et al., editors. Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.; 2000. Available from: https://www.ncbi.nlm.nih.gov/books/NBK279175/
2 Trivedi S, Pandit A, Ganguly G, Das SK. Epidemiology of peripheral neuropathy: An Indian perspective. Ann Indian Acad Neurol. 2017; 20(3):173-84.
3 Bansal V, Kalita J, Misra UK. Diabetic neuropathy. Postgrad Med J. 2006; 82(964): 95–100.
4 Hicks CW, Selvin E. Epidemiology of Peripheral Neuropathy and Lower Extremity Disease in Diabetes. Curr Diab Rep. 2019;19(10):86.
5 Liu X, Xu Y, An M, Zeng Q. The risk factors for diabetic peripheral neuropathy: A meta-analysis. PLoS One. 2019; 14(2): e0212574.

CLASSIFICATION[6,7]

A. Diffuse neuropathy (Distal symmetric polyneuropathy (DSPN),Diabetic autonomic neuropathy(DAN) which may affect cardiovascular gastrointestinal, urogenital & sudomotor function)
B. Mononeuropathy (mononeuritis multiplex) (atypical forms)
C. Radiculopathy or polyradiculopathy (atypical forms)

PATHOGENESIS[8]

The pathogenesis of diabetic neuropathy is complex and is mainly marked by metabolic and vascular factors. Causative factors include persistent hyperglycemia, microvascular insufficiency, oxidative and nitrosative stress, defective neurotrophism, and autoimmune-mediated nerve destruction. Although nerve fiber loss is accepted as the genesis of insensitivity in Diabetic Peripheral Neuropathy (DPN), the pathophysiological explanation behind neuropathic pain in diabetes mellitus is poorly understood.

DIAGNOSIS[9]

The diagnosis of DPN can only be made after a careful clinical examination.

Patients with type 1 diabetes mellitus for 5 or more years and all patients with type 2 diabetes mellitus should be assessed annually for DSPN using medical history and simple clinical tests.

Clinical tests

- Small-fiber function: pinprick and temperature sensation.
- Large-fiber function: vibration perception, proprioception, 10-g monofilament, and ankle reflexes.

Clinical presentation[9]

- The most frequent presentation of DPN is the symmetrical sensory pain/impairment that affects lower limbs earlier than the upper limbs in a classic stocking and gloves' appearance.
- Other symptoms to suggest DPN include atypical pain, altered sensations, numbness, sensation of pins and needles, hot or burning sensations. More interestingly, painful symptoms could happen in diabetic patients with or without neuropathy.
- Neuropathic motor dysfunction symptoms include muscle weakness, poor balance and falls.
- Signs of neuropathy tested at the bedside include vibration sensation and altered proprioception, which reflect large-fibre function.

6 Tesfaye S, Boulton AJM, Dyck PJ, Freeman R, Horowitz M, Kempler P, et al. Diabetic Neuropathies: Update on Definitions, Diagnostic Criteria, Estimation of Severity, and Treatments. Diabetes Care. 2010; 33(10): 2285–2293.
7 Assessing diabetic peripheral neuropathy in primary care. Best Practice Journal; 2014:61:37-47.
8 Juster-Switlyk K, Smith AG. Updates in diabetic peripheral. F1000Researc. 2016;5(F1000 Faculty Rev):738.
9 Hamed E, Monem MA. A review of diabetic peripheral neuropathy management given recent guidelines updates. Arch Gen Intern. Med. 2018;2(4):1-5.

- Also, impairment of pain, light touch, and temperature which reflects small fibres-functions, any of which could present as an early sign of neuropathy.
- Motor signs include wasting and decreased reflexes.
- Motor and sensorimotor neuropathy symptoms and signs are all reported and recognised as complications of diabetes mellitus.

INVESTIGATIONS[10]

Investigations are needed for DPN to exclude any other underlying pathology and severity of disease. Some of the investigations are:

- Blood sugar levels
- Nerve conduction velocity
- Quantitative sensory testing (Biothesiometer, Thermoaesthesiometer, etc.)
- Sudomotor function (Quantitative Sudomotor Axon Reflex Test (QSART), sympathetic skin response, etc.)
- Neurophysiology [Nerve conduction study(NCS) of motor and sensory nerves]
- Skin punch biopsy [Intra-Epidermal Nerve Fiber Density (IENFD)]
- Corneal confocal microscopy.

EVALUATION AND ASSESSMENT

- Neuropathy Disability Score[5]
- The Diabetic Neuropathy Symptom Score[11]
- The Neuropathy Total Symptom Score-6 (NTSS-6)[12]
- Estimating severity by grades[13]
- Diabetic Neuropathy Examination (DNE)[14]
- Diabetic Distal Symmetric Polyneuropathy Symptom Score (DDSPSS)[15]

RED FLAGS [16]

- Atypical progression of neuropathy
- Relative lack of coexistent retinopathy or neuropathy
- Failure to achieve adequate control of dysaesthesia

10 Petropoulos IN, Ponirakis G, Khan A, Almuhannadi H, Gad H, Malik RA. Diagnosing Diabetic Neuropathy: Something Old, Something New. Diabetes Metab J. 2018;42(2):255-69.
11 Meijer JW, Smit AJ, Sonderen EV, Groothoff JW, Eisma WH, Links TP. Symptom scoring systems to diagnose distal polyneuropathy in diabetes: The Diabetic Neuropathy Symptom score. Diabet Med. 2002;19(11):962-5.
12 Bastyr EJ, Price KL, Bril V. Development and validity testing of the neuropathy total symptom score 6: questionnaire for the study of sensory symptoms of diabetic peripheral neuropathy. Clin Ther. 2005;27(8):1278-94.
13 Dyck PJ. Detection, characterization, and staging of polyneuropathy: assessed in diabetics. Muscle Nerve. 1988;11(1):21-32.
14 Yang Z, Chen R, Zhang Y, Huang Y, Hong T, et al. Scoring systems to screen for diabetic peripheral neuropathy. Cochrane Database Syst Rev. 2018; 7:CD010974.
15 Nayak C, Oberai P, Varanasi R, Baig H, Ch R, Reddy GR, et al. A prospective multi-centric open clinical trial of homeopathy in diabetic distal symmetric Polyneuropathy. Homeopathy. 2013;102(02):130-138.
16 Phillips P. Red flags for diabetic neuropathy. Endocrinology Today. 2013;2(1):19-22.

- Secondary problems (especially anaesthetic feet)

DIFFERENTIAL DIAGNOSIS[17]

1	*Metabolic diseases*	▪ Thyroid diseases (common) ▪ Renal diseases
2	*Systemic diseases*	▪ Systemic vasculitis ▪ Non-systemic vasculitis ▪ Paraproteinemia (common) ▪ Amyloidosis
3	*Infections*	▪ HIV ▪ Hepatitis B ▪ Lyme's disease
4	*Inflammatory*	▪ Chronic inflammatory demyelinating polyradiculoneuropathy
5	*Nutritional deficiencies*	▪ Vitamin B12 ▪ Post-gastroplasty ▪ Pyridoxine ▪ Thiamine ▪ Tocopherol
6	*Industrial agents, drugs, and metals*	• Acrylamide • Organophosphorous agents • Amiodarone • Arsenic • Mercury etc.
7	*Hereditary*	• Hereditary motor, sensory, and autonomic neuropathies

COMPLICATIONS[8,18]

Insensitivity or loss of pain leads to foot ulceration and a host of unintentional serious injuries or infections. Patients who have lost feelings in their hands cannot sense temperature and often burn themselves while cooking or ironing, and also have difficulty in handling small objects. Those who have lost sensation in their feet often sustain puncture wounds, friction wounds and burns that can become infected and/or ulcerated and lead to gangrene, amputation.

PREVENTION[19]

Early detection and control of diabetes mellitus and coexisting risk factors for neuropathy (e.g., smoking, alcohol abuse, hypertension) can prevent, delay, or slow the progression of diabetic neuropathy.

17 Pop-Busui R, Boulton AJM, Feldman EL, Bril V, Freeman R, Malik RA. Diabetic Neuropathy: A Position Statement by the American Diabetes Association. Diabetes Care. 2017; 40(1): 136–154.

18 Tesfaye S, Selvarajah D. Advances in the epidemiology, pathogenesis and management of diabetic peripheral neuropathy. Diabetes Metab Res Rev. 2012;28(1):8-14.

19 Aring AM, Jones DE, Falko JM. Evaluation and prevention of Diabetic Neuropathy. American Family Physician. 2005;71(11):2123-2128.

MANAGEMENT[17,18,20]

General management

Patients of diabetes mellitus for a long period, may present with neuropathic symptoms such as- classic stocking and gloves' appearance, atypical pain, altered sensations, numbness, sensation of pins and needles, hot or burning sensations etc. They should be advised to maintain their blood sugar levels, by lifestyle changes such as regular physical activities and diet management.

Some activities of daily life such as walking, normal work, relationship with others, sleep have been found to be effective in patients with DN.[21] Plant-based (vegetarian diet) dietary interventions, vitamin B12 intake, changes in nutritional habits and food preparations, effective dietary education etc. typically improve glycemic control and prevent the onset of diabetes mellitus as well as its complications as DN.[22,23]

Homoeopathic management

Diabetic neuropathy is a chronic disease and deep acting constitutional homoeopathic medicine is needed. The similimum selected on the basis of totality of symptoms of patients suffering from diabetic neuropathy will not only alleviate the symptoms of neuropathy but also control the blood glucose levels.

The research studies and case reports in diabetic neuropathy have shown beneficial role of homoeopathic treatment in these cases.[15,24,25] Homoeopathic literature gives many remedies for this disease condition. The main diagnostic symptoms of DPN (Numbness, Insensibility foot; Formication, Delusions senses of, Prickling, Senses hyperacute, Painlessness of complaints usually painful) were converted into corresponding rubrics and repertorised using 'Complete Repertory'. The following are the medicines enlisted against any of these rubrics (in grade 3) are : *Sulphur, Lycopodium, Rhus toxicodendron, Nux vomica, Phosphoric acid, Phosphorus, Arsenicum album, Conium maculatum, Cocculus, Opium, Secale cornutum, Rhododendron, Platinum metallicum, Graphites* and *Stramonium.*

20 Bhadada SK, Sahay RK, Jyotsna VP, Agrawal JK. Diabetic Neuropathy: Current Concepts. Journal, Indian Academy of Clinical Medicine.2001;2(4):305-318.

21 Yo M, D'Silva L, Martin K, Sharma N, Pasnoor, LeMaster JW, et al. Pilot Study of Exercise Therapy on Painful Diabetic Peripheral Neuropathy. Pain Med. 2015; 16(8):1482-89.

22 Bunner AE, Wells CL, Gonzales J, Agarwal U, Bayat E, Barnard ND. A dietary intervention for chronic diabetic neuropathy pain: a randomized controlled pilot study. Nutr Diabetes. 2015;5(5); e158.

23 Sun Y, Lai MS, Lu CJ. Effectiveness of vitamin B12 on diabetic neuropathy: systematic review of clinical controlled trials. Acta Neurol Taiwan. 2005;14(2):48-54.

24 Mehra P, Sharma B, Baig H, Raveendar C, Prasad RVR, Rao MP, et al. Efficacy of homoeopathic treatment for diabetic distal symmetric polyneuropathy: A multicentric randomised double-blind placebo-controlled clinical trial. Explore (NY). 2020 May 22; S1550-8307(20)30163-4

25 Pomposelli R, Piasere V, Andreoni C, Costini G, Tonini E, Spalluzzi A, et al. Observational study of homeopathic and conventional therapies in patients with diabetic polyneuropathy. Homeopathy. 2009 Jan;98(1):17-25.

The list of frequently prescribed medicines with their characteristic indications are given below:[26]

Medicines	General indications	Characteristic particulars
Lycopodium clavatum	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi-dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4pm- 8 pm; right sided complaints or symptoms shifts from right to left; desire for warm foods and drinks, sweet; dominating, cranky, lack of self-confidence, precocious*	• Burning in soles; tingling numbness and prickling sensation in the extremities • Sense of formication; pain in the extremities mostly at night • Worse from heat or warm room, hot air, bed, warm applications • Better by motion, on getting cold, from being uncovered
Phosphorus	*Tall, fast growing child with tendency to stoop; haemorrhagic tendency; Chilly patient. Craving for salt, cold foods and drinks. Oversensitive to external impressions; Nervous and affectionate, anxious esp. during thunderstorm*	• Senses hyperacute; burning in the feet and soles; numbness of feet • Sense of formication • Burning in feet • Weakness and trembling, from every exertion • Worse touch, change of weather, from getting wet in hot weather, evening, lying on left or painful side, ascending stairs • Better lying on right side, cold, open air, washing with cold water, sleep
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sit stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve*	• Numbness, tingling and burning that begins in feet and spreads proximally • Pain occasionally lancinating or lightning in type, typically involving the lower extremities • 'Glove and Stocking' sensation, diminished perception of vibration, pain and temperature felt at distal parts; loss of tendon reflexes in lower limbs • Worse at rest, when standing, warmth in bed, washing, bathing, periodically • Better dry, warm weather, lying on right side, from drawing up affected limbs
Phosphoricum acidum	*In young people who grow rapidly, and who are overtaxed, mentally or physically. Debility is very marked in this remedy, producing a nervous exhaustion. Mental debility first; later physical. The system has been exposed to the ravages of acute disease, excesses, grief, loss of vital fluids*	• Numbness of feet; sense of formication • Delusions of a prickling sensation; painlessness of complaints; burning feet and soles; pain stitching in nature • Worse exertion, everything impeding circulation causes aggravation of symptoms • Better from keeping warm

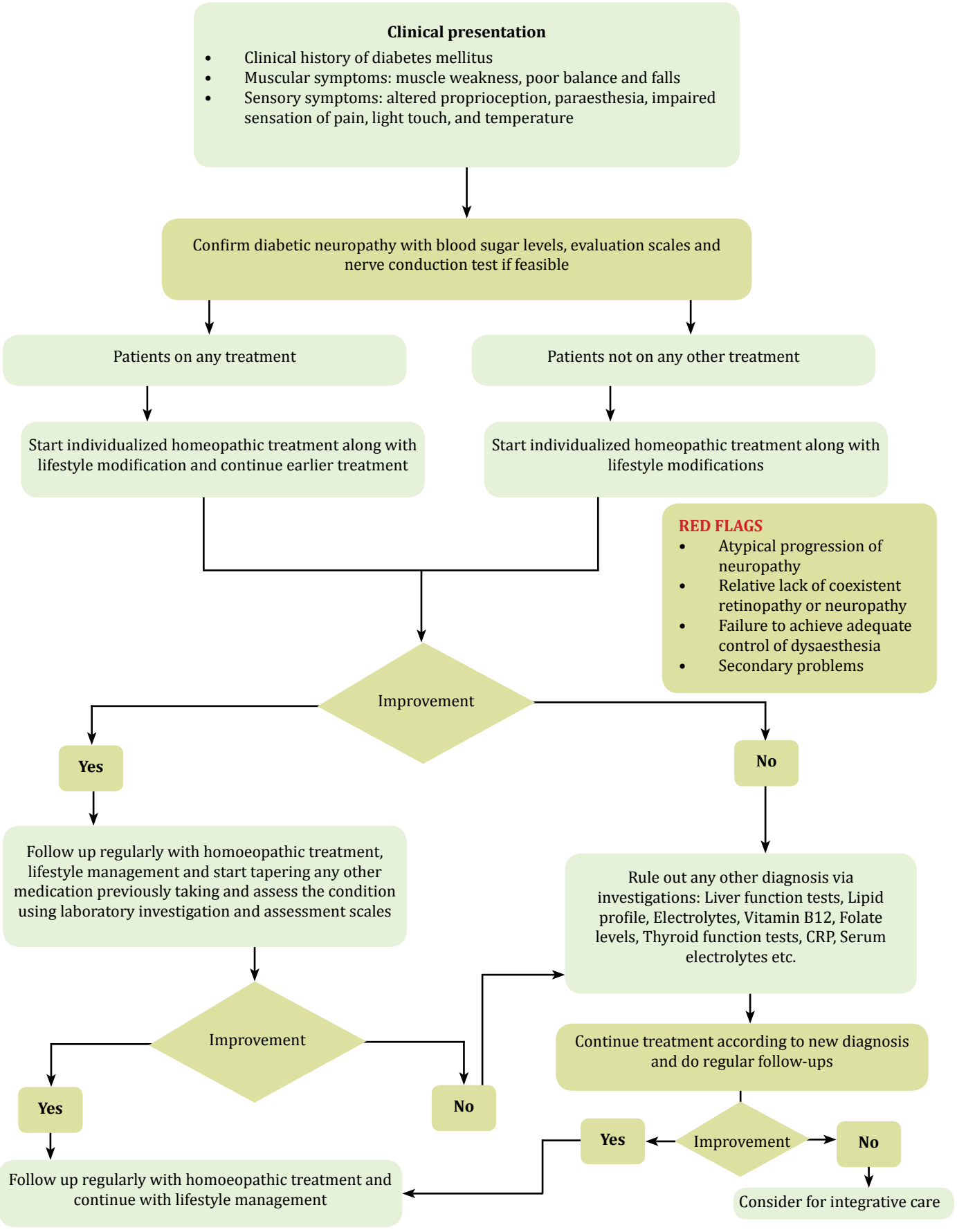
26 Boericke W. New Manual of Homoeopathic Materia Medica with Repertory. 3rd revised and augmented edition based on 9th edition. New Delhi; B. Jain Publishers; 2007.

Medicines	General indications	Characteristic particulars
Arsenicum album	*Chilly patient; rapid disproportionate prostration; burning pains better by heat (except headache); cadaveric odour of discharges and body; anxiety, anguish, fear for death and restlessness*	• Burning all over the body at night; burning, prickling, stitching pain in the extremities • Numbness of both the feet and soles; aggravates while sitting • Worse wet weather, from cold, right side
Calcarea carbonica	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets; aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated*	• Burning in soles. • Cold, damp feet; feel as if damp stockings were worn • Sharp sticking, as if parts were wrenched or sprained • Weakness of extremities • Worse from exertion, ascending, cold in every form, water, washing, moist air, wet weather, standing • Better dry climate and weather, lying on painful side
Nux vomica	*Chilly patient; thin, prone to indigestion; tongue coated yellowish in the posterior part; oversensitive to all external impressions; noise, odors, light or music nervous disposition*	• Paresis of arms, with shocks • Legs numb; feels paralyzed; sensation of sudden loss in power of arms and legs, in the morning • Worse morning, touch, dry weather, cold • Better in evening, while at rest, in damp, wet weather, strong pressure
Conium maculatum	*Troubles at the change of life, old and bachelors; with a type of weakness, languor, local congestions, and sluggishness. Vertigo, when lying down and when turning over in bed. Tumors, piercing pains; worse at night. Better, while fasting, in the dark, from letting limbs hang down, motion and pressure*	• Fingers and toes numb • Muscular weakness especially of lower extremities • Worse lying down, turning or rising in bed
Opium	*Insensibility of the nervous system, the depression, dropsy stupor, painlessness, and torpor and the lack of vital reaction. Sweaty skin. Want of susceptibility to remedies even though indicated. Diseases originating from fright. Worse, heat, during and after sleep. Better, cold things, constant walking*	• Painless paralysis. Numbness • Twitching of limbs • Coldness of limbs

Medicines	General indications	Characteristic particulars
Secale cornutum	*Old people with shrivelled skin-thin, scrawny old women. Anemic condition, coldness, numbness, petechiae, mortification, gangrene. Debility, anxiety, emaciation, though appetite and thirst may be excessive*	• Formication, pain and spasmodic movements. Numbness • Fingers and bluish shrivelled, spread apart or bent backwards, numb • Violent cramps, icy coldness of extremities • Violent pain in fingertips, tingling in toes. • Worse heat, warm covering • Better cold, uncovering, rubbing, stretching out limbs
Platinum metallicum	*Tendency to paralysis, anaesthesia, localized numbness and coldness are shown. Hysterical spasms: pains increase and decrease gradually. Objects look smaller than they are. Physical symptoms disappear as mental symptoms develop. Constipation of travellers, who are constantly changing food and water*	• Numb and weary sensation • Feels paralyzed. Strong tendency to paralysis, anaesthesia, localized numbness and coldness • Pains increase and decrease gradually • Worse sitting and standing, evening • Better walking
Stramonium	*Painlessness of complaints; chorea, mania and fever delirium; young plethoric children, furious, malicious, fearful, desires light and company, worse in the dark and solitude*	• Absence of pain and muscular mobility especially in muscles of expression and of locomotion • Worse after sleep • Better warmth
Rhus toxicodendron	*Chilly patient; sore, body bruised and stiff; restless, can't rest in any position; red triangular tip of tongue; worse in damp, cold, rainy weather, during rest and sleep, better by continued motion; increased thirst; great apprehension at night, sad, anxious; weeping without knowing why*	• Burning all over the body at night; pain in ankles on walking • Numbness of the feet and soles, aggravation while sitting; burning in feet and soles; prickling, stitching pain in the extremities • Worse at night, when lying on back or right side • Better warm, dry weather, walking, change of position, rubbing, warm applications, from stretching out limbs
Plumbum metallicum	*The blood, alimentary and nervous systems are the special seats of action. Progressive muscular atrophy. Mental depression. Abdomen retracted. Constipation; stools hard, lumpy, black with urging and spasm of anus. Worse, at, night, motion. Better, rubbing, hard pressure, physical exertion*	• Paralysis of single muscle • Stinging and tearing in limbs, also twitching and tingling, numbness, pain or tremor

Medicines	General indications	Characteristic particulars
Nitricum acidum	*Chilly patient. Offensive discharges especially urine, feces and perspiration. Sensitive to noise, pain, touch, jar. Pain sharp, sticking, pricking as from splinters, suddenly appearing and disappearing*	• Sensation of band around the head, around the bones. • Excessive physical irritability • Worse evening and night, cold climate, hot weather • Better while riding in carriage
Natrium muriaticum	*Hot patient; poorly nourished, great emaciation (marked on neck); losing flesh while living well; craving for salt; aversion to bread and fatty things; constipated; increased thirst; mapped tongue with red insular patches; melancholic, sad, plays alone, irritable, cross, cries when spoken to; awkward, hasty, drops things from nervous weakness; disposition to weep without cause, consolation aggravates*	• Palms hot and perspiring • Numbness and tingling in fingers and lower extremities. Ankles weak and turn easily • Great weakness and weariness. Oversensitive to all sorts of influences • Worse warm room, lying down about 10 a m, at seashore, heat • Better open air, cold bathing, lying on right side, tight clothing
Carboneum sulphuratum	*Sluggishness of mind. Dementia alternating with excitement. Ski, anaesthesia, burning, itching, sensitive patients worse cold with wasted muscles and skin*	• Peripheral neuritis cramps in limbs • Lightening like pain with cramps. Anaesthesia of arms and hands, unsteady, tottering feet insensible • Worse bathing, sensitive to warm, damp, weather • Better in open air

ALGORITHM FOR MANAGEMENT OF DIABETIC NEUROPATHY


Clinical presentation
Clinical history of diabetes mellitus
Muscular symptoms: muscle weakness, poor balance and falls
Sensory symptoms: altered proprioception, paraesthesia, impaired sensation of pain, light touch, and temperature
Confirm diabetic neuropathy with blood sugar levels, evaluation scales and nerve conduction test if feasible
Patients on any treatment
Patients not on any other treatment
Start individualized homeopathic treatment along with lifestyle modification and continue earlier treatment
Start individualized homeopathic treatment along with lifestyle modifications
RED FLAGS
Atypical progression of neuropathy
Relative lack of coexistent retinopathy or neuropathy
Failure to achieve adequate control of dysaesthesia
Secondary problems
Improvement
Yes
No
Follow up regularly with homoeopathic treatment, lifestyle management and start tapering any other medication previously taking and assess the condition using laboratory investigation and assessment scales
Rule out any other diagnosis via investigations: Liver function tests, Lipid profile, Electrolytes, Vitamin B12, Folate levels, Thyroid function tests, CRP, Serum electrolytes etc.
Improvement
Yes
No
Continue treatment according to new diagnosis and do regular follow-ups
Improvement
Yes
No
Follow up regularly with homoeopathic treatment and continue with lifestyle management
Consider for integrative care

CHAPTER 11

GOUT

GOUT

CASE DEFINITION[1,2,3]

Gout is a chronic disease of deposition of monosodium urate crystals (crystal-induced arthritis), which form in the presence of increased urate concentrations. It is characterised by severe pain, redness, tenderness in joints which occur due to too much uric acid crystal deposits in the joints. It is the most common inflammatory arthritis in men and in older women.

INCIDENCE/ PREVALENCE[4,5,6,7]

- The general prevalence of gout is 1–4% in the general population. In western countries, it occurs in 3–6% men and 1–2% women. Prevalence rises up to 10% in men and 6% in women more than 80 years old.
- In India, approximately 0.12-0.19% population is affected by gout with male preponderance. Polyarticular gout is more frequent in the elderly and females. Initial presentation is predominantly monoarticular with the ankle joint being the commonest to be involved. But overall, the first metatarsophalangeal (MTP) joint is the commonest joint affected with > 90% having this joint involvement at some point of the disease.
- The reported male to female ratio is approximately 7:1 to 9:1 but in people over the age of 65 this ratio is reduced to 3:1.

AETIOLOGY AND RISK FACTORS[8,9,10,11]

- **Hyperuricaemia:** Most important risk factor for the development of gout (Normal range for serum urate levels is 2.0-7.0 mg/dl in men and 2.0-6.0 mg/dl in women).
- **Genetic factors:** Familial clustering is often evident in common primary gout.
- **Dietary factors:** Dietary factors like intake of meat, seafood, sugar-sweetened soft drinks, and foods high in fructose.
- **Alcohol consumption:** Alcohol consumption especially beer and hard liquor increases the risk of incidence gout.
- **Obesity:** BMI is significantly associated with risk for gout. Obesity increases serum urate by eliciting both increased production and decreased renal excretion of urate.

1 Neogi T. Clinical practice. Gout. N Engl J Med. 2011;364(5):443-452.
2 Davidson S, Bouchier I, Edwards C. Davidson's principles and practice of medicine. 21st ed. London: E.L.B.S. and Churchill Livingstone;1991.
3 Dalbeth N, Merriman TR, Stamp LK. Gout. Lancet. 2016;388(10055):2039-2052.
4 Kumar S, Gupta R, Suppiah R. Gout in women: differences in risk factors in young and older women. NZMJ.2012;125(1363):39-45.
5 Ragab G, Elshahaly M, Bardin T. Gout: An old disease in new perspective - A review. J Adv Res. 2017;8(5):495-511.
6 Paul BJ, James R. Gout: an Asia-Pacific update. Int J Rheum Dis. 2017; 20(4): 407-416.
7 Smith E, Díaz-TC, Perez-RF, March L. Epidemiology of gout: An update. Best practice & research. Clinical rheumatology. 2010; 24(6):811-27.
8 Singh JA, Reddy SG, Kundukulam J. Risk factors for gout and prevention: a systematic review of the literature. Curr Opin Rheumatol. 2011;23(2):192–202.
9 Roddy E, Doherty M. Gout. Epidemiology of gout. Arthritis Research & Therapy. 2010; 12(6):223.
10 Saag KG, Choi H. Epidemiology, risk factors, and lifestyle modifications for gout. Arthritis Res Ther.2006;8(Suppl 1):2.
11 Walker S.W. Laboratory reference ranges. In: Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston, editors. Davidson's principles practice of medicine. 21st ed. Edinburgh; New York: Churchill Livingstone/Elsevier; 2010: p.1296.

- **Metabolic syndrome:** Hypertension, renal insufficiency, hypertriglyceridemia, hypercholesterolemia, diabetes mellitus, obesity and early menopause are associated with a higher risk of incidence of gout and/or gout flares.
- **Diuretic use:** Thiazide and loop diuretics are associated with higher risk of incidence of gout and higher rate of gout flares.
- **Renal disease:** Chronic renal disease is an important risk factor for gout.
- **Age and sex:** Clinically, gout is often considered a male disease. The prevalence of gout increases in direct association with age. Gout in the elderly has a more equal sex distribution, most likely reflecting the loss of the uricosuric effect of estrogen following the menopause.
- **Recent surgery or trauma:** Hyperuricemia and gout are common complications of renal and other major solid-organ transplants.

PATHOGENESIS[12,13]

Gout is a metabolic disorder that arises due to increased formation of uric acid, an end product of purine metabolism.

Production of urate crystals: The amount of urate in the body depends on the balance between dietary intake, synthesis, and the rate of excretion. Hyperuricemia results from urate overproduction (10%), underexcretion (90%), or often a combination of the two. The purine precursors come from exogenous (dietary) sources or endogenous metabolism (synthesis and cell turnover). The increased formation and decreased excretion of urate causes increase in the serum concentration of uric acid which is subsequently converted to the monosodium urate crystals.

Inflammatory response in gout: The uric acid exists as needle shape crystals which are identified and ingested by the monocytes and neutrophils. Inflammosome comprising of multi-molecular structure is a pro-cytokine that activates the interleukin-1 which triggers the inflammatory response. Release of interleukin-1 and other cytokines initiate the inflammatory response which subsequently triggers the acute gout attack. Neutrophils with ingested crystals get closed and tightly packed with one another. Consequently, progress to the cell death following a unique pattern which is called tophaceous gout. Other mediators that are involved in inflammation include alpha-tissue necrosis factor and interleukin-6.

DIAGNOSIS[5,14]

Clinical presentation

Gout undergoes four phases during its course, which are stated below.

- *Asymptomatic hyperuricaemia:* In this stage, patients have no symptoms or signs and are usually accidentally discovered when measuring serum uric acid (serum level greater than 7 mg/dL).

12 Choi HK, Mount DB, Reginato AM. Pathogenesis of Gout. Ann Intern Med. 2005;143(7):499–516.
13 Kanwal A, Abida L, Sana A, Ahlam S. A systematic review on the prevalence, pathophysiology, diagnosis, management and treatment of gout (2007-2018). GSC Biological and Pharmaceutical Sciences.2018;5(1):50-55.
14 Grassi W, Angelis RD. Clinical features of gout. Reumatismo.2011; 63(4):238-245.

- *Acute gouty attack:* Classically, it produces an acute mono-arthritis of rapid onset, often waking patients from sleep, reaching a peak within 24 to 48 hours. The pain is intense, and patients often cannot wear socks or touch bedsheets during flare-ups with marked exacerbation of pain even at the simple touch. The affected joints become red, shiny and tender in a few hours. The most affected joints are big toe also known as podagra (50% of initial attacks), foot, ankle, mid tarsal, knee, wrist, finger, and elbow. Acute flares also occur in periarticular structures, including bursae and tendons.
- *Inter-critical period:* During the period between acute attacks the patient is asymptomatic even if monosodium Urate (MSU) deposition may continue to increase silently.
- *Chronic tophaceous gout:* It is characterized by the deposition of solid MSU crystal aggregates in various locations including joints, bursae, and tendons as tophi. Tophaceous gout may lead to significant morbidity and, if untreated, can cause prominent joint damage and marked functional impairment.

The signs and symptoms of gout almost always occur suddenly, and often at night. They include:

- *Intense joint pain*- Gout usually affects the large joint of your big toe, but it can occur in any joint. Other commonly affected joints include the ankles, knees, elbows, wrists and fingers. The pain is likely to be most severe within the first four to 12 hours after it begins.
- *Lingering discomfort*- After the most severe pain subsides, some joint discomfort may last from a few days to a few weeks. Later attacks are likely to last longer and affect more joints.
- *Inflammation and redness*- The affected joint or joints become swollen, tender, warm and red.
- *Limited range of motion*- As gout progresses, you may not be able to move your joints normally.

INVESTIGATIONS[15,16]

Identification of urate crystals in fluid from an affected joint is the definitive diagnostic test for the diagnosis of gout. In practice, this test is applied to only a minority of patients. Guidelines exist for clinical diagnosis without joint aspiration. Other tests which may be considered are:

Test	Comment
Serum urate concentration	Level may go down in few cases during an acute attack (serum uric acid levels ≤6 mg/dL)
Full blood count	To exclude myeloproliferative disorders; raised white cell count may indicate septic arthritis
Renal function	Hyperuricaemia can occur in renal failure
Fasting lipids, glucose, and thyroid functions	Hyperlipidaemia, diabetes mellitus, hypothyroidism, and possibly hyperthyroidism are associated with gout
Urinary urate excretion	Some authorities advise measuring this if the serum urate concentration is >0.8 mmol/l because of risk of renal stone formation

15 Underwood M. Diagnosis and management of gout. BMJ. 2006;332(7553):1315–1319.
16 Schlesinger N, Norquist JM, Watson DJ. Serum urate during acute gout. J Rheumatol.2009; 36(6):1287-89.

EVALUATION AND ASSESSMENT[17,18,19,20]

Acute gout

- Likert scale and/or Visual Analog Scale (VAS) to measure pain
- Likert scale for joint swelling; joint tenderness, patient global assessment, physician global assessment
- Joint inflammation score (10-point scale combining tenderness, function, swelling scores)
- Gout Attack Intensity Score (GAIS)

Chronic gout

- Gout Impact Scale (GIS)
- HAQ-II Health Assessment Questionnaire-II
- Health Assessment Questionnaire-Disability Index (HAQ-DI)
- Gout Assessment Questionnaire version 2.0 (GAQ v2.0)
- Brief Illness Perception Questionnaire [B-IPQ].

DIFFERENTIAL DIAGNOSIS[21]

The following diseases must be considered in differential diagnosis of acute gout:

- Septic arthritis
- Trauma
- Active arthritis
- Pseudogout
- Rheumatoid arthritis
- Psoriatic arthritis.

COMPLICATIONS[22,23]

Gout is known to be associated with several co-morbidities, such as hypertension, cardiovascular disease, heart failure, renal failure, diabetes mellitus, obesity, hyperlipidemia and metabolic syndrome. Some other complications are:

17 Singh JA, Taylor WJ, Simon LS, Khanna PP, Stamp LK, McQueen FM, et al. Patient-reported outcomes in chronic gout: a report from OMERACT 10. J Rheumatol. 2011;38(7):1452–1457.

18 Janssen CA, Voshaar MAHO, Klooster PMT, Jansen TLTA, Vonkeman HE, Laar MAFJVD. A systematic literature review of patient-reported outcome measures used in gout: an evaluation of their content and measurement properties. Health and Quality of Life Outcomes. 2019;17(1):63.

19 Janssen CA, Voshaar MAHO, Klooster PMT, Vonkeman HE, Laar MAFJVD. Development and validation of a patient-reported gout attack intensity score for use in gout clinical studies. Rheumatology. 2019; 58(11):1928-1934.

20 Lee W, Teng GG, Kok JC, Santosa A, Lim AYN, Wee H-L. Validity and reliability of the Gout Impact Scale in a multi-ethnic Asian population. Int J Rheum Dis. 2019; 22(8): 1427– 1434.

21 Engel B, Just J, Bleckwenn M, Weckbecker K. Treatment Options for Gout. Dtsch Arztebl Int. 2017;114(13):215–222.

22 Zhong M. Research on Complications of Gout and Prevention. In: 2nd International Conference on Social Science, Public Health and Education (SSPHE 2018). Advances in Social Science, Education and Humanities Research.2019;196:255-257. [Cited on 2019 September 4] Available from: file:///C:/Users/lenovo/AppData/Local/Temp/61.pdf

23 Sam SE, Thomas TE, Abraham E. A review on gout. World Journal of Pharmaceutical Research. 2016;5(6):634-647.

- Formation of tophi
- Joint damage
- Renal diseases like renal stones, chronic kidney disease
- Cardiovascular diseases like coronary heart disease, stroke
- Glucose intolerance and diabetes mellitus
- Retinopathy.

RED FLAGS[24]

- Uncontrollable pain
- Joint destruction
- Constitutional features such as fever, weight loss and malaise
- Renal failure.

MANAGEMENT[19,25]

General management

Lifestyle and dietary recommendations for gout patients should consider overall health benefits and risk, since gout is often associated with the metabolic syndrome and an increased future risk of cardiovascular disease (CVD) and mortality. Some of the measures are:

- Overweight patients should aim for a normal weight but should not crash-diet or follow protein-rich diets such as the atkins diet.
- Reduced-fat foods and vegetarian sources of protein should be integrated into the diet.
- Protein-rich foods such as meat and yeast should be avoided.
- Patients known to suffer from gout and kidney stones should be instructed to consume sufficient fluids (>2 L /day).
- Consumption of alcohol, particularly beer and spirits, should be reduced. Patients should be encouraged to refrain from consuming alcohol on at least 3 days per week.
- Sugar-sweetened beverages should be avoided. Fructose inhibits uric acid excretion by the kidneys.

Homoeopathic management [26,27]

Research studies indicate that homoeopathic medicines play a considerable role in not only alleviating the serum uric acid in gout but also a significant role in improving the well-being, activity and quality of life of patients with gout, without any adverse effects. A few studies have been done showing the effects of homoeopathic medicines in hyperuricemia.[28,29]

24 Schroeder K. The 10-minute clinical assessment. [Internet]. 2nd ed. Malden, MA: Wiley-Blackwell, 2016 [cited on 2019 September 4]. Available from: https://www.worldcat.org/title/10-minute-clinical-assessment/oclc/966128564/viewport
25 Choi HK. A prescription for lifestyle change in patients with hyperuricemia and gout. Curr Opin Rheumatol. 2010 Mar;22(2):165-72.
26 Boericke W. Pocket manual of homoeopathic materia medica with repertory. New Delhi: B. Jain Publishers; 2007.
27 Allen HC. Allen's Key Notes and characteristics of the material medica with nosodes. New Delhi: B. Jain Publishers;1986.
28 Saha S, Sarkar P, Chattopadhyay R, Saha S. An open-label prospective observational trial for assessing the effect of homoeopathic medicines in patients suffering from gout. Indian J Res Homoeopathy.2019;13(4):236-43.
29 Deep A, Kumar A. Homoeopathic management of hyperuricemia in primary gout: A randomised single blind placebo controlled study. International journal of homoeopathic sciences.2020;4(1):73-77.

Homoeopathic constitutional simillimum improves the quality of life of patients, along with reducing the intensity of pain, and reducing the disease activity. The homoeopathic consultation process is a very detailed, elaborate and a personalized process; the entire process of case taking, case receiving has a definite therapeutic effect on the patient with gout.

The therapeutic strategy for the management of gout would depend among other factors, upon the stage of the disease and if the patient is consuming allopathic medication which would interfere with the expressions of the symptoms of the disease. Anamnesis would help trace the original unmodified picture of the disease and establish the evolutionary stages through which the patient has traversed. This would enable the physician to become clear about the miasmatic diagnosis as well as the state of the susceptibility at the point of time.

Therapeutic strategies might thus call for one of the following actions:

a. Initiating treatment with an acute/specific medicine based on the existing symptom to take care of the acute exacerbations which are inevitable when the suppressive medication is withdrawn.
b. Use of the intercurrent remedy based on the appreciation of the miasmatic blocks encountered. Here the pre-dominant miasm is sycotic maism.
c. Introducing the chronic medicine after the complete withdrawal of the allopathic medication or when the symptom totality clearly points to its use or the improvement has stopped after relief obtained by specific homoeopathic medicine.

In Synthesis repertory[30], 208 medicines are found in chapter EXTREMITIES under the rubric 'Pain-joint-gouty'. The homoeopathic literature has rich source of medicines for all stages of gout. There are few rare remedies also which can be used during acute exacerberation condition. The frequently verified characteristic features of some specific remedies are: ***Uric acid****:* Gout with gouty eczema, lipoma. ***Ammonium phosphoricum***: Chronic gout, uric acid diathesis, nodosities in joints of fingers and at the back of hands. Coldness from least draft of air. ***Ammonium benzoicum****:* Remedy for albuminuria, especially in patients with gout diathesis. Gout, with deposits in joints. ***Arnica montana:*** Gout with extreme soreness. Great fear of being touched or approached. Sprained and dislocated feeling. Soreness after over exertion. ***Formic acid:*** Gout, chronic myalgia, muscular pain and soreness. Appears suddenly, worse right side, motion, better pressure. ***Urtica urens***: Gout and uric acid diathesis, pain of acute gout. Worse from snow air, cool moist air, touch. ***Chininum sulphuricum***: Polyarticular gout, acute articular rheumatism.

Indications of frequently prescribed medicines for the management of gout are given below:[31]

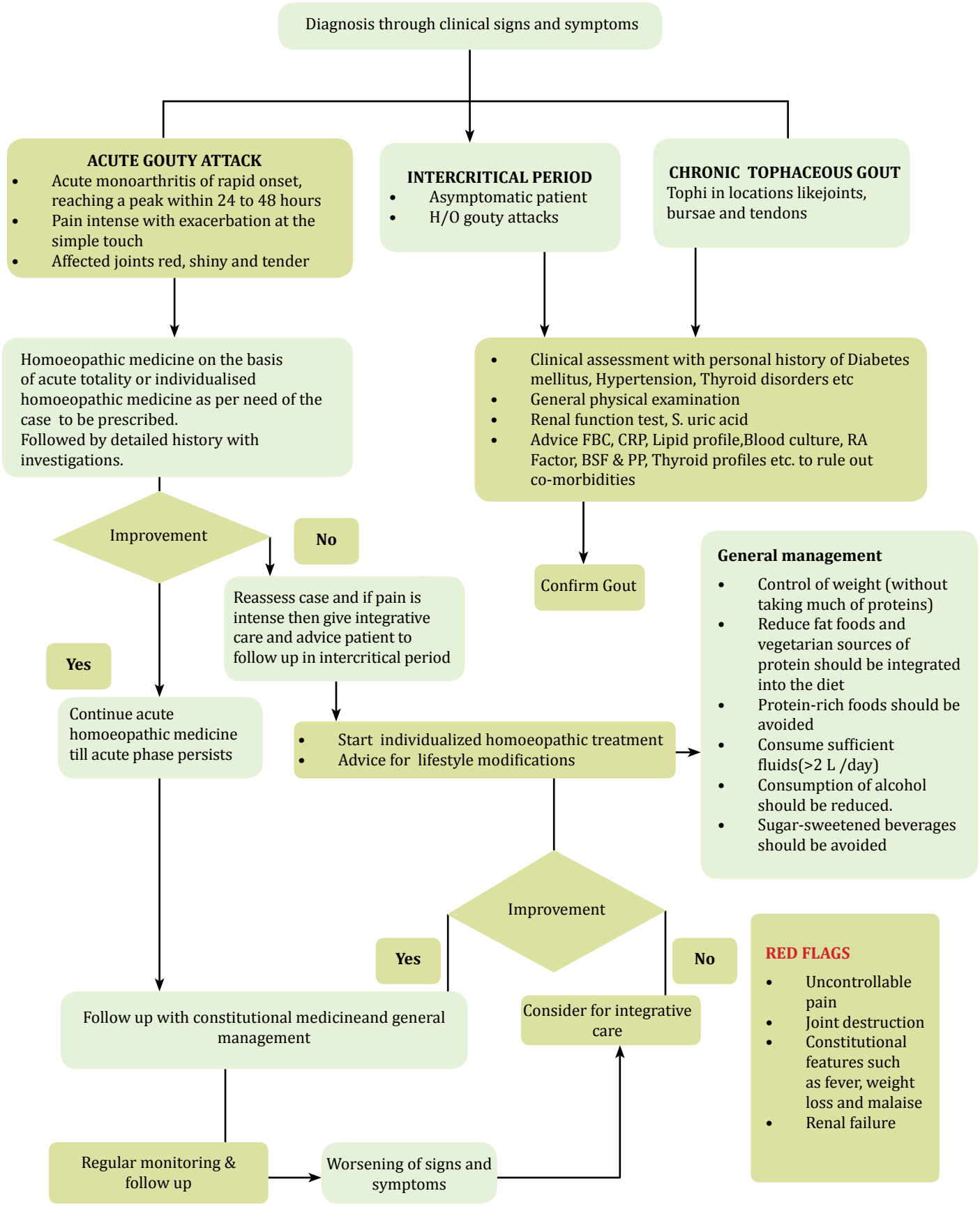
30 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002.
31 Allen HC. Allens Keynotes rearranged and classified with leading remedies of the Materia Medica and bowel nosodes. 9th ed. New Delhi: B Jain Publishers Pvt Ltd;2017.

Medicines	General indications	Characteristic particulars
Colchicum autumnale	*Has specific power in relieving the gouty paroxysms. It seems to be more beneficial in chronic affections of these parts. There is always great prostration, internal coldness and a tendency to collapse. Craving for various things but becomes averse to them on smelling, followed by nausea. Smell of food causes nausea, even fainting. Abdomen immensely distended with gas*	• The parts are red, hot, swollen • Tearing pains; stubbing the toes hurts exceedingly • Inflammation of great toe, gout of the heel, cannot bear to have it touched or moved • Joints stiff and shifting rheumatism; feverish • Painful electric like vibrations produced by touch and motion. Soreness of the parts • Worse in the evening, at night, in warm weather, change of weather, from touch, lack of sleep • Better by warmth, rest, doubling up
Benzoicum acidum	*It has marked action on metabolism. It produces and cures symptoms of uric acid diathesis, with highly coloured and very offensive urine with excess of uric acid; gouty symptoms. Antisycotic. Offensiveness of urine and stool. Worse in open air, by uncovering. Wandering pains, change places suddenly*	• Gouty concretions; affects all the joints, especially the knee • Joints crack on motion; nodosities • Pain in tendo-achillis • Tearing pain in great toe. Pains tearing, stitching, in large joints of big toe; redness and swelling of joints • Worse at night, on uncovering, change of weather, during motion • Better by heat, profuse urination
Ledum palustre	*Constitutions abused by alcohol. Especially affects the rheumatic diathesis, from functional pain to altered secretions and deposits of solid, earthy matter in the tissues. There is general lack of animal heat, and yet heat of bed is intolerable. Complaints of people who are cold all the time; always feel cold and chilly; lack of animal or vital heat. Parts are cold to touch but not cold subjectively to patient. Red pimples on the forehead and cheeks as in brandy drinkers*	• Rheumatism begins in feet and travels upward • Gouty pain shoots through the foot, limb and joints, but especially in the small joints • Gouty nodosities. Ball of great toe swollen • Soles painful, can hardly step on them • Worse at night, from motion, heat of bed and covering • Better by putting feet in icy cold water

Medicines	General indications	Characteristic particulars
Lycopodium clavatum	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4 pm - 8 pm; right sided complaints or symptoms shift from right to left; desire for warm foods and drinks, sweet; dominating, cranky, lack of self-confidence, precocious*	• Chronic gout with chalky deposits in the joints • Pain in the heels on treading, as if from a pebble • Right foot hot, left cold • Worse from heat or warm room, hot air, bed • Better by motion, on getting cold, from being uncovered
Pulsatilla nigricans	*Hot patient; marked changeability of symptoms; aversion to fatty foods, warm foods and drinks, dislikes butter; thirstless with great dryness of mouth; tongue coated yellow or whitish; worse towards evening and in warm room, better in open air, by slow, gentle motion and cold applications; desire for company, mild, gentle, affectionate, yielding, weeping disposition*	• Drawing tensive pain with restlessness and chilliness • Pain in limbs shifting rapidly • Boring pain in heels towards evening; suffering from letting the affected limb hang down • Pains appear suddenly leaves gradually • Worse lying on left or painless side
Sabina	*Chronic ailments of women. Has special action on uterus; also on serous and fibrous membranes; hence its use in gout. Pain from sacrum to the pubis with haemorrhages, where blood is fluid and clots together. Tendency to miscarriage especially at 3rd month. Violent pulsations; wants windows open*	• Arthritic pain in joints • Red shining swelling • Gouty nodosities • Worse in a hot room, from warm air, least motion
Rhododendron	*Rheumatic and gouty symptoms well marked. Rheumatism in the hot season. Dread of storm, particularly afraid of thunderstorm. Worse before a storm is a true guiding symptom. Cannot sleep until legs are crossed. Electric shock like pains*	• Gouty inflammation of great toe joint • Rheumatic tearing pain in all limbs, especially right side • Worse at rest at night towards morning and in stormy weather • Better, after the storm breaks, warmth

Medicines	General indications	Characteristic particulars
Guaiacum officinale	*Especially adapted to arthritic diathesis, rheumatism and tonsillitis. Very valuable in acute rheumatism. Foul secretions. Offensive odor from the whole body. Sensitiveness. Aggravation from local heat. Contraction of limbs, stiffness and immobility. Feels that he must stretch*	• Gouty tearing pain with contractions • Arthritic lancinations followed by contraction of limbs • Immovable stiffness • Stinging pain in the limbs • Pain in ankles extending up to the legs, causing lameness • Sensation of heat in the affected limbs • Joints swollen, painful and intolerant to pressure; cannot bear heat • Worse from motion, heat, cold wet weather, pressure, touch • Better from external pressure
Antimonium crudum	*Thickly coated white tongue. All conditions aggravated by heat and cold bathing. Cannot bear heat of sun. Tendency to grow fat. Desire for acids and pickles. Diarrhoea alternates with constipation*	• Gout with gastric symptoms • Arthritic pain in fingers • Feet very tender • Better in open air, during rest
Lithium carbonicum	*Chronic rheumatism connected with heart lesions. Uric acid diathesis. The whole body is sore. Gout and tophi. Headache ceases while eating. Acidity, nausea, gnawing pain, relieved by eating*	• Paralytic stiffness all over • Itching around the joints • Rheumatic pains throughout; the small joints are generally affected • Pain in hollow of foot, extending to the knee • Swelling and tenderness of finger and toe joints • Ankles pain while walking • Better from hot water, rising and moving about
Berberis vulgaris	*Rapid change of symptoms – pain changes in regard to place and character. Thirst alternates with thirstlessness. Persons with pale, earthy complexion, with sunken cheeks and hollow, blue-encircled eyes. Listless, apathetic, indifferent. Anxiety before sleep in the evening. Left side renal stones.*	• Rheumatic paralytic pain in the shoulders, arms, hands and fingers, legs and feet • Neuralgia under the fingernails with swelling of finger joints • Heels painful as if ulcerated • Stitching pain between metatarsal bones as if from a nail when standing • Pain in balls of feet on stepping • Worse by pressure, in various attitudes, during active exercise, motion, standing

ALGORITHM OF TREATMENT PROCESS FOR GOUT


Diagnosis through clinical signs and symptoms
ACUTE GOUTY ATTACK
Acute monoarthritis of rapid onset, reaching a peak within 24 to 48 hours
Pain intense with exacerbation at the simple touch
Affected joints red, shiny and tender
INTERCRITICAL PERIOD
Asymptomatic patient
H/O gouty attacks
CHRONIC TOPHACEOUS GOUT
Tophi in locations likejoints, bursae and tendons
Homoeopathic medicine on the basis of acute totality or individualised homoeopathic medicine as per need of the case to be prescribed.
Followed by detailed history with investigations.
Clinical assessment with personal history of Diabetes mellitus, Hypertension, Thyroid disorders etc
General physical examination
Renal function test, S. uric acid
Advice FBC, CRP, Lipid profile,Blood culture, RA Factor, BSF & PP, Thyroid profiles etc. to rule out co-morbidities
Improvement
No
Yes
Reassess case and if pain is intense then give integrative care and advice patient to follow up in intercritical period
Continue acute homoeopathic medicine till acute phase persists
Confirm Gout
General management
Control of weight (without taking much of proteins)
Reduce fat foods and vegetarian sources of protein should be integrated into the diet
Protein-rich foods should be avoided
Consume sufficient fluids(>2 L /day)
Consumption of alcohol should be reduced.
Sugar-sweetened beverages should be avoided
Start individualized homoeopathic treatment
Advice for lifestyle modifications
Improvement
Yes
No
Follow up with constitutional medicineand general management
Consider for integrative care
RED FLAGS
Uncontrollable pain
Joint destruction
Constitutional features such as fever, weight loss and malaise
Renal failure
Regular monitoring & follow up
Worsening of signs and symptoms

CHAPTER 12

MIGRAINE

MIGRAINE

CASE DEFINITION[1]

The name 'migraine' originally comes from the Greek word *hemicrania*, meaning 'half of the head', representing one of the most striking features of the condition that in many cases pain only affects one half of the head. The pain is generally throbbing in nature, and typically made worse by any form of movement or even modest exertion. The pain of migraine is typically accompanied by other features such as nausea, dizziness, extreme sensitivity to lights, noises, and smells, lack of appetite, disturbances of bowel function, and so on.

INCIDENCE /PREVALENCE[2,3,4]

- Migraine is ranked as the third most prevalent disorder and seventh-highest specific cause of disability worldwide and represents one-third of all neurological disease burden with more than 50% of neurological Years lived with disability (YLD) or 22.9% of global YLDs.
- Migraine is also a paroxysmal headache that affects almost 10% of adults around the world.
- It is experienced at some point by over 20% of women and over 10% men.
- Globally, migraine is the most common type of headache among individuals aged 20-40 year old, with the highest occurrence being around the age of 40, known to be the age of the maximum workforce.

ETIOLOGY AND RISK FACTORS[5,6,7]

The etiology of migraine is largely unknown, however several factors which may be associated with migraine are:

- Stress, fatigue, poor mood, excessive or too little sleep
- Genetic components (multiple genetic variants and environmental factors together)
- A stronger family history of migraine (lower age-at-onset, a higher number of acute headache medication days, and migraine with aura)
- Lack of food or infrequent meals (missing meals)
- Certain foods (including of products like caffeine, tyramine, alcohol, monosodium glutamate)
- Changing sleep patterns (weekend lie-ins or shift work)
- Hormonal factors (menstrual cycles, oral contraceptives)

1 Weatherall MW. The diagnosis and treatment of chronic migraine. Ther Adv Chronic Dis. 2015;6(3):115–123.
2 Stovner LJ, Hagen K, Jensen R, Katsarava Z, Lipton R, Scher A, et al. The global burden of headache: a documentation of headache prevalence and disability worldwide. Cephalalgia. 2007;27(3):193-210.
3 Sajobi TT, Amoozegar F, Wang M, Wiebe N, Fiest KM, Patten SB, et al. Global assessment of migraine severity measure: preliminary evidence of construct validity. BMC Neurology. 2019;19:53.
4 Jawed S, Ali W, Yaqoob U, Shah S, Uddin SMM, Aatera Ha. Effect of Migraine Headache on Productivity of Patients According to Migraine Disability Assessment Score: A Cross-Sectional Study. Pain Ther. 2019. 8(2):233-238.
5 Pelzer N, Louter MA, van Zwet EW, Nyholt DR, Ferrari MD, van den Maagdenberg AMJM, et al. Linking migraine frequency with family history of migraine. Cephalalgia. 2019;39(2):229-36.
6 Muthyala N, Qadrie ZL, Suman A. Migraine & Migraine Management: A Review. Pharma Tutor. 2018;6(4):8-17.
7 Huber D, Henrich G. Personality Traits and Stress Sensitivity in Migraine Patients. Behav Med. Spring 2003;29(1):4-13.

- Over-tiredness/over-exertion (physical and/or mental)
- Extreme emotions (anger and grief)
- Environmental factors (loud noise, bright lights, strong smells, hot stuffy atmosphere)
- Climatic conditions (strong winds, extreme cold or hot)
- Obesity is a risk for migraine (progress from episodic to chronic migraine).

PATHOPHYSIOLOGY [6,8]

There are different theories regarding the pathophysiology for migraine. Migraine without aura is considered as a neurobiological disorder and pain is believed to result from activity within trigeminal nucleus resulting in release of vasoactive neuropeptides, particularly calcitonin gene-related peptide (CGRP), neurokinin A, and substance P, from perivascular axons. The released neuropeptides interact with dural blood vessels to promote vasodilatation and dural plasma extravasations, resulting in perivascular inflammation. Orthodromic conduction alone trigeminovascular fibres transmits pain impulses to the trigeminal nucleus caudalis where the information is relayed further to higher cortical pain centres.

Cortical spreading depression (CSD), a slow, self-propagating wave of neuronal and glial depolarization is the neuro-physiological phenomenon likely involved with the pathophysiology of the migraine aura. Mutations in gene CACNA1A of calcium voltage gated (50%) and SCN1A of Na+ /K+ ATPase (20%) have tendency to suffer from migraine. The platelet hypothesis involves abnormal platelet activation with relevant characteristics like: they do not adhere to one another unless precipitated; certain stimuli (catecholamines, thromboxane A2 and ADP) when aggregate release a portion of contents (e.g. Serotonin, adenosine and its phosphate derivatives). This platelet hyperaggregability forms micro-emboli that lodge in microvasculature releasing their contents which cause changes in vasomotor tone which induce tissue response leading to migraine pain.

DIAGNOSIS [9,10,11]

There are two main types of migraine: migraine without aura (MO), and migraine with aura (MA). Many people have both; MO is at least three times as common as MA. Only about 20% of migraine sufferers experience aura, usually (but not invariably) before the headache starts.

A positive diagnosis is based on the typical clinical picture that does not require any further investigations to exclude alternative explanations for a patient's symptoms.

Clinical presentation

The clinical presentation of migraine may vary from patient to patient, and from one attack to another in same patient. It may occur in three clinical phases:

8 Hadjikhani N, Vincent M. Neuroimaging clues of migraine aura [Internet]. The Journal of Headache and Pain 20. [Internet] 2019 [cited on 2021 March 10]. Available from: file:///C:/Users/A/Downloads/Hadjikhani-Vincent 2019_Article_NeuroimagingCluesOfMigraineAur.pdf

9 DeMaagd G. The Pharmacological Management of Migraine, Part 1 Overview and Abortive Therapy. P T. 2008; 33(7):404–416.

10 The International Classification of Headache Disorders 3rd edition [Internet]. 2013 [Cited on 2020 March 19]. Available from: https://ichd-3.org/1-migraine/

11 Weatherall MW. The diagnosis and treatment of chronic migraine. Ther Adv Chronic Dis. 2015; 6(3):115–123.

1. The *pre-headache phase* includes the premonitory phase and the migraine aura. This phase may precede the headache by hours to days, affecting up to 20% to 60% of patients. Features of the premonitory phase are both physical and somatic, compared with the aura phase, which manifests with more neurological features.
2. During the *headache phase* the migraine itself usually presents with throbbing, pulsatile pain in the fronto-temporal region, usually lasting from 4 to 72 hours. The pain may vary in severity from mild to severe. Other clinical features include nausea, vomiting, autonomic symptoms, nasal congestion, and lacrimation.
3. The *resolution (post-dromal) phase* consists of fatigue and irritability, lasting a day or two; this is sometimes referred to as the "migraine hangover."

Although these three phases characterize the stages of migraine, many patients do not present in such a typical fashion; they might experience only some of these clinical features.

Diagnostic criteria for migraine without aura [12]

A	At least five attacks fulfilling criteria B–D
B	Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated)
C	Headache having at least two characteristics: 1. Unilateral location 2. Pulsating quality 3. Moderate or severe pain intensity 4. Aggravation by or causing avoidance of routine physical activity (e.g., walking or climbing stairs)
D	During headache, at least one of the following: 1. Nausea and/or vomiting 2. Photophobia and phonophobia
E	At least one of the following: History and physical and neurologic examination

Diagnostic criteria for migraine with aura[12]

A	At least two attacks fulfilling criteria B and C
B	Aura consisting of at least one of the following criteria but no motor weakness: Fully reversible visual symptoms, including positive features (e.g., seeing flickering lights or spots or lines), negative features (e.g., loss of vision), or both fully reversible sensory symptoms, including positive features (e.g., feeling of pins and needles, usually in arms and legs, face, or on one side of the body), negative features (e.g., numbness), or fully reversible dysphasic speech disturbance
C	At least two of the following four characteristics: 1. At least one aura symptom spreads gradually over 5 minutes, and/or two or more symptoms occur in succession 2. Each individual aura symptom lasts 5-60 minutes 3. At least one aura symptom is unilateral 4. The aura is accompanied, or followed within 60 minutes, by headache
D	Symptoms cannot be attributed to another disorder

12 Muthyala N, Qadrie ZL, Suman A. Migraine & Migraine Management: A Review. Pharma Tutor 2018;6(4):8-17.

INVESTIGATIONS[11]

Almost everyone with migraine needs no investigation. The goal of investigating is to exclude other causes of migraine like symptoms, not to confirm migraine.

- Screen out hypertension and depression
- Erythrocyte sedimentation rate (ESR) to rule out temporal arteritis
- Chest X-ray in smokers to consider metastatic cancer
- CT scan to rule out SOL (space occupying lesions), malignancy.

EVALUATION AND ASSESSMENT

- ID-Migraine, a three-item screening test[13]
- Migraine-Specific Quality of Life Survey[14]
- Migraine Disability Assessment Scale (MIDAS)[15]
- Migraine Severity Scale[16]
- Global Assessment of Migraine Severity (GAMS)[2]
- The Visual Aura Rating Scale (VARS)17
- Headache Impact Test -6 (HIT-6)[18]

DIFFERENTIAL DIAGNOSIS [19,20]

- Tension type headache
- Cluster headache
- Medication overuse headache (MOH).

Differentiating features of tension-type headache, migraine and cluster headache are:

Headache feature	Tension-type headache	Migraine (with or without aura)	Cluster headache
Pain location	Bilateral	Unilateral or bilateral	Unilateral (around the eye, above the eye and along the side of the head/face)
Pain quality	Pressing/tightening (non-pulsating)	Pulsating (throbbing or banging in young people aged 12–17 years)	Variable (can be sharp, boring, burning, throbbing or tightening)

13 Lipton RB, Dodick D, Sadovsky R, Kolodner K, Endicott J, Hettiarachchi J, et al. A self-administered screener for migraine in primary care The ID Migraine validation study. Neurology. 2003;61(3):375-82.
14 Jhingran P, Davis SM, LaVange LM, Miller DW, Helms RW. MSQ: Migraine- Specific Quality-of-Life Questionnaire. Further investigation of the factor structure. Pharmacoeconomics. 1998;13(6):707-17.
15 Stewart WF, Lipton RB, Kolodner K, Liberman J, Sawyer J. Reliability of the migraine disability assessment score in a population-based sample of headache sufferers. Cephalalgia. 1999;19(2):107-14.
16 El Hasnaoui A, Vray M, Richard A, Nachit-Ouinekh F, Boureau F, MIGSEV Group. Assessing the severity of migraine: development of the MIGSEV scale. Headache. 2003;43(6):628–35.
17 Eriksen MK, Thomsen LL, Olesen J. The Visual Aura Rating Scale (VARS) for migraine aura diagnosis. Cephalalgia. 2005;25(10):801-10.
18 Yang M, Rendas-Baum R, Varon SF, Kosinski M. Validation of the Headache Impact Test (HIT-6™) across episodic and chronic migraine Cephalalgia. 2011;31(3):357–367.
19 Elrington G. Migraine: Diagnosis and Management. J Neurol Neurosurg Psychiatry. 2002;72(2):ii10–ii15.
20 National Institute for Health and Care Excellence. London: Headaches in over 12s: diagnosis and management Clinical guideline [Internet]. 2012 [Cited 2019 August 06]. Available from: https://www.nice.org.uk/guidance/cg150

Headache feature	Tension-type headache		Migraine (with or without aura)		Cluster headache	
Pain intensity	Mild or moderate		Moderate or severe		Severe or very severe	
Effect on activities	Not aggravated by routine activities of daily living		Aggravated by, or causes avoidance of, routine activities of daily living		Restlessness or agitation	
Other symptoms	None		Unusual sensitivity to light and/or sound or nausea and/or vomiting. Aura symptoms can occur with or without headache and are fully reversible; develop over at least 5 minutes, last 5–60 minutes. Typical aura symptoms include visual symptoms such as flickering lights, spots or lines and/or partial loss of vision; sensory symptoms such as numbness and/or sensation of pins and needles; and/or speech disturbance		On the same side as the headache: red and/or watery eye, nasal congestion and/or runny nose, swollen eyelid, forehead and facial sweating, constricted pupil and/or drooping eyelid	
Duration of headache	30 minutes–continuous		4–72 hours in adults; 1–72 hours in young people aged 12–17 years		15–180 minutes	
Frequency of headache	<15 days per month	≥ 15 days per month for more than 3 months	< 15 days per month	≥ 15 days per month for more than 3 months	Once every other day to 8 times per day, with remission for > 1 month	Once every other day to 8 per day, with continuous remission for <1 month in a 12-month period
Diagnosis	Episodic tension-type headache	Chronic tension-type headache	Episodic migraine (with or without aura)	Chronic migraine (with or without aura)	Episodic cluster headache	Chronic cluster headache

COMPLICATIONS [9]

- Status migrainosus
- Migrainous infarction
- Migraine aura-triggered seizure.

PREVENTION[16]

- Lifestyle management (avoidance of relative hypoglycaemia)
- Alternative therapies (large doses of vitamin B2, and magnesium).

RED FLAGS [21]

- Thunderclap headache
- Positional headache
- Headaches initiated by exertion
- New headaches (especially if older than 50 years of age or conditions such as cancer, blood clotting disorder)
- Substantial change in headache pattern
- Constant headache always in the same location of the head
- Worrisome neurologic symptoms
- Headache that never goes away
- Systemic symptoms.

MANAGEMENT

General management [9,11]

- Migraine treatment depends on the duration and severity of pain, associated symptoms, degree of disability, and initial response to therapy. To maintain a headache diary is helpful.
- Medical conditions like stroke, myocardial infarction, epilepsy, affective and anxiety disorders, and some connective tissue disorders are more common in people with migraine. Regular health check ups should be done to identify underlying cause.
- Avoid triggering factors/risk factors such as sleep patterns, emotional status, stress etc. to decrease the frequency of episodes of migraine.
- Non-drug therapies include biofeedback, behavior modification, and psychosocial interventions, including relaxation and stress management, acupuncture, applications of heat and cold, impulse magnetic-field therapy, photic stimulation, and physical approaches (e.g., aerobic exercise, isometric neck exercises, and chiropractic manipulations).

Homoeopathic management

Migraine falls into the category of chronic disease. It is essentially paroxysmal in nature and precipitated by various causative modalities. This chronic illness has acute exacerbations in its course. So, there is a prominent role of detailed case taking which will unfold the person behind suffering. It will be crucial to identify various attributes of the person, the stressors at work, family, society level and other physical causative factors like weather change, etc. which can be understood properly and managed.

Acute exacerbations can be managed by various acute medicines like *Glonoine* selected after proper data collection about attacks of migraine and analysing the symptom picture manifested by the patient before, during and after the attacks. But the chronic individualized constitutional medicines given after the acute attack will help in reducing the frequency of acute attacks and will modify the intensity of further acute paroxysms of headache.

21 Schwedt TJ. Headache "Red Flags". [Internet] American migraine foundation [Internet]. 2015 [Cited 2020 March 19]. Available from: https://americanmigrainefoundation.org/resource-library/headache-red-flags-when-to-see-your-doctor/

Homoeopathic intervention has been found to have encouraging results in terms of decrease in the frequency, severity, and duration of migraine attacks.[22,23,24]

In Synthesis repertory[25], medicines for migraine in the chapter HEAD under the rubric 'Migraine' (see Pain) mentions 767 remedies. The frequently verified characteristic features of some organospecific remedies are: ***Cedron***: Pain from temple to temple across eyes. Pain over whole right side of face, coming on about 9 am; worse working on rising from bed, dizzy, cannot see to light a candle and could not tell when it was lighted. Whole body seems numb with headache. Periodicity is a marked symptom. ***Chinninum sulphuricum***: Pain in forehead and temples, increasing gradually at noon, of malarial origin, with vertigo and pulsation. Worse left side. Inability to remain standing. ***Iris versicolor***: Frontal headache, with nausea. Scalp feels constricted. Right temple especially affected. Sick headache, worse rest; begins with a blur before eyes, after relaxing from a mental strain. ***Onosmodium virginianum:*** Chiefly left-sided migraine; occipito-frontal pain in the morning on waking. Pain in the eyeballs between orbit and the ball, extending to the left temple.

The list of frequently prescribed polychrest medicines with their indications are given below[26,27]

Medicines	General indications	Characteristic particulars
Belladonna	*Congestion is the keynote of the medicine; hot, red skin, flushed face, glaring eyes, throbbing carotids. Excited mental state, delirium, restless sleep, convulsive movements. Dryness of mouth and throat with aversion to water. Pains that come and go suddenly*	• Headache congestive with red face, throbbing of brain and carotids • Worse from slight noises, jar, motion, light, lying down, least exertion • Better from pressure, in semi-erect posture, tight bandaging, wrapping up, during menses
Cocculus indicus	*Unmarried and childless women, sensitive and romantic girls, etc. Spasmodic and paretic affections, notably those affecting one-half of the body. All the symptoms are worse riding in a carriage or on shipboard; seasickness. Time passes too quickly. Aversion to food, drink, tobacco*	• Headache in nape and occiput; extending to the spine; as if tightly bound by a cord; with nausea, as if at sea; at each menstrual period • Sick headache from carriage, boat or train riding • Prosopalgia in the afternoon with wide radiations of pain • Pain worse from lying on back of head, emotional disturbance

22 Walach H, Lowes T, Mussbach D, Schamell U, Springer W, Stritzl G, et al. The long-term effects of homeopathic treatment of chronic headaches: one-year follow-up and single case time series analysis. Br Homeopath J. 2001;90(2):63-72.

23 Muscari-Tomaioli G, Allegri F, Miali E, Pomposelli R, Tubia P, Targhetta A, et al. Observational study of quality of life in patients with headache, receiving homeopathic treatment. Br Homeopath J. 2001;90(4):189-97.

24 Witt CM, Lüdtke R, Willich SN. Homeopathic treatment of patients with migraine: a prospective observational study with a 2-year follow-up period. J Altern Complement Med. 2010;16(4):347-55.

25 Schroyens F. Synthesis Repertory ver. 9.1; New Delhi: B Jain Publishers Pvt. Ltd.; 2002.

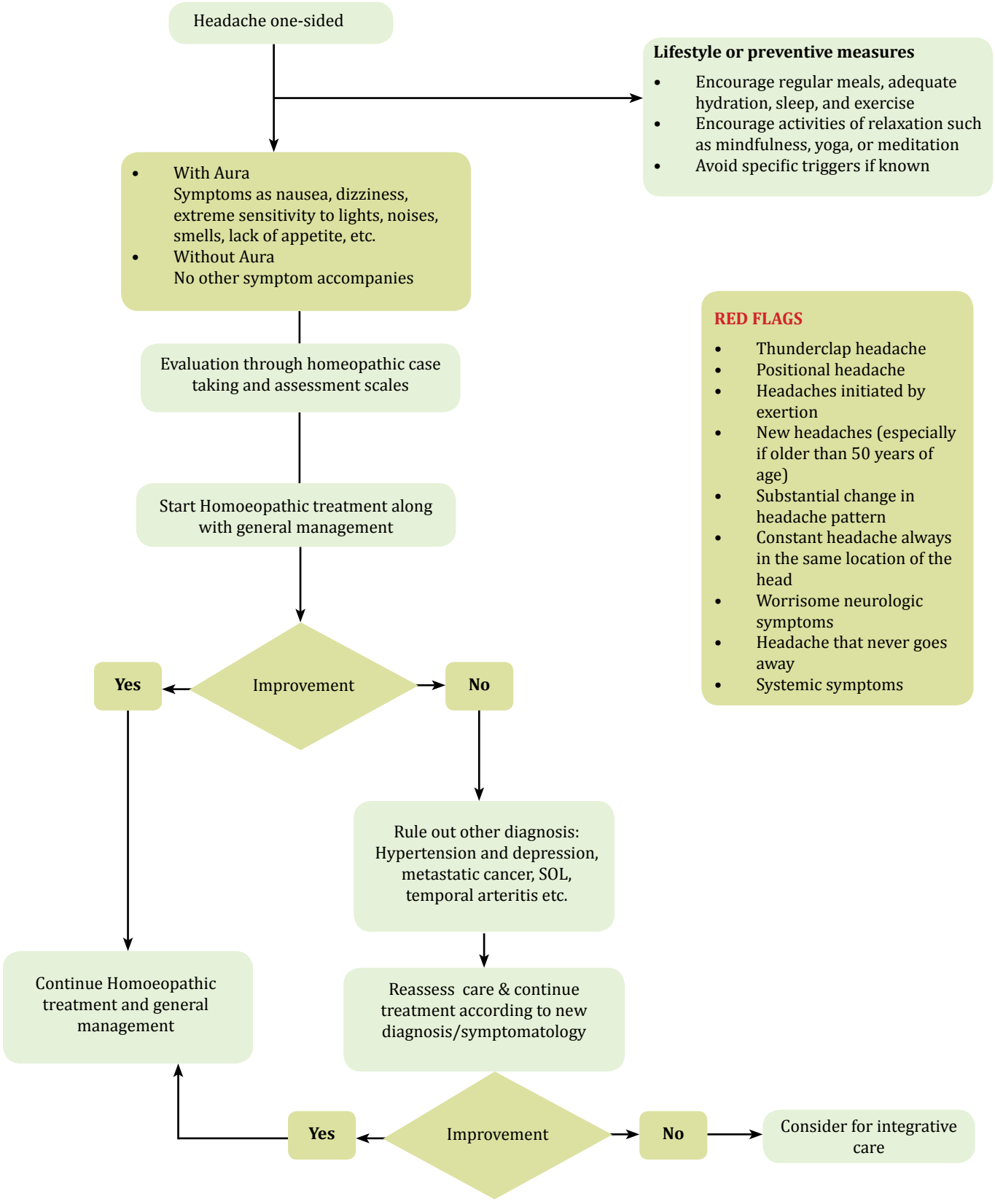
26 Boericke W. Boericke's New manual of Homoeopathic Materia Medica with Repertory: Third Revised & Augmented Edition based on Ninth Edition. New Delhi: B. Jain Publishers(P) Ltd.; 2007.

27 Allen HC. Allens Keynotes rearranged and classified with leading remedies of the Materia Medica and bowel nosodes, 9th ed. New Delhi: B Jain Publishers Pvt Ltd; 2017.

Medicines	General indications	Characteristic particulars
Gelsemium sempervirens	*Insidious onset of complaints; aching, tired, heavy, weak and sore; tremors; thirst less; dull, drowsy and dizzy; nervous, desires to be held, great depression from heat of sun or summer*	• Headache preceded by blindness • Headache, pain begins in the cervical spine and pains extends overhead, causing bursting sensation in forehead and eyeballs; begins in the same way, but semi-lateral • Sensation of band around the head above eyes; scalp sore to touch • Worse from smoking, heat of sun, lying with head low, mental exertion • Better by profuse urination, compression, lying with head high
Glonoinum	*Confusion with dizziness; confusion as to location; lost in well-known places. Worse from sun; symptoms come and go with sun*	• Headache occurring after profuse uterine haemorrhage; rush of blood to head, in pregnant women • Throbbing pulsating headache; holds head with both hands; can not lie down, "the pillow would beat" • Better from uncovering the head
Lachesis mutus	*Hot patient; thin and emaciated; hemorrhagic diathesis; great sensitiveness to touch; hot flushes and perspiration; desires oysters, alcohol, farinaceous foods; all complaints worse after sleep; loquacious, jumps from one idea to another, jealous, suspicious, indolent*	• Headache, pressing or bursting pain in temples; dreads to go to sleep because she awakens with such a headache • With headache, flickering, dim vision and very pale face • Worse from motion, pressure, stooping, lying, after sleep • Better from onset of a discharge
Natrium muriaticum	*Hot patient; poorly nourished, great emaciation (marked on neck); losing flesh while living well; craving for salt; aversion to bread and fatty things; constipated; increased thirst; mapped tongue with red insular patches; melancholic, sad, plays alone, irritable, cross, cries when spoken to; awkward, hasty, drops things from nervous weakness; disposition to weep without cause, consolation aggravates*	• Chronic headache, semi-lateral, congestive • Headache begins with blindness; with zigzag dazzling, like lightning in eyes, ushering in; throbbing headache; from eye strain • Aches as if a thousand little hammers were knocking on the brain • Before attack, numbness and tingling in lips, tongue and nose, relieved by sleep • Worse from noise, music, mental exertion, consolation, heat, talking, in warm room, in the morning on awakening, after menstruation, from sunrise to sunset • Better in open air, from cold bathing, going without regular meals, lying on right side

Medicines	General indications	Characteristic particulars
Nux vomica	*Chilly patient; thin, prone to indigestion; tongue coated yellowish in the posterior part; constipation with frequent unsuccessful desire for stool. Bad effects of spiced food, alcohol, loss of sleep, mental over exertion. oversensitive to all external impressions: noise, odors, light or music; nervous disposition*	• Headache in occiput or over eyes, with vertigo; brain feels turning in a circle • Pressing pain in vertex, as of a nail driven in • Frontal headache, with desire to press the head against something • Congestive headache associated with haemorrhoids • Better in damp, wet weather, from hard strong pressure
Sepia officinalis	*Chilly patient; tall, thin built with yellow saddle across upper part of cheeks and nose; big belly; dry flabby skin. Predisposed to take cold from change of weather. Desire for sour food which aggravates. Irregular menses. Cheerful, active when well but indifferent and quarrelsome when sick, self-absorbed, sad, weeping and indolent*	• Headache: in terrific shocks; at menstrual nisus, with scanty flow; in delicate, sensitive, hysterical women; pressing, bursting pain • Worse from motion, stooping, mental labor • Better by external pressure, continued hard motion
Silicea terra	*Extremely chilly patient; all symptoms worse by cold except stomach complaints, which are ameliorated. Profuse, offensive discharges; sweats profusely especially on feet. Easy suppuration; glandular affinity; large head and distended abdomen; weak ankles, slow in learning to walk; constipation. Obstinate, head strong, cries when spoken kindly to, nervous, apprehensive, oversensitive, irritable and fearful*	• Chronic sick headaches, since some severe disease of youth; ascending from nape of neck to the vertex, as if coming from the spine and locating in one eye, especially the right • Worse from draught of air or uncovering the head • Better from pressure wrapping up warmly, profuse urination
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sits stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve*	• Sick headache every week or every two weeks; prostrating, weakening; with hot vertex and cold feet • Beating, throbbing headache • Worse from stooping
Syphilinum	*Utter prostration and debility in the morning. Pains from darkness to daylight; decrease and increase gradually. Syphilitic affections. Loss of memory, apathetic, hopelessness of recovery, confusion*	• Linear pains from temple, across, or from eyes backwards • Stupefying cephalgia • Pain increases and decreases gradually • Worse at night, from sun down to sunrise

ALGORITHM OF TREATMENT PROCESS FOR MIGRAINE


Headache one-sided
Lifestyle or preventive measures
Encourage regular meals, adequate hydration, sleep, and exercise
Encourage activities of relaxation such as mindfulness, yoga, or meditation
Avoid specific triggers if known
With Aura
Symptoms as nausea, dizziness, extreme sensitivity to lights, noises, smells, lack of appetite, etc.
Without Aura
No other symptom accompanies
RED FLAGS
Thunderclap headache
Positional headache
Headaches initiated by exertion
New headaches (especially if older than 50 years of age)
Substantial change in headache pattern
Constant headache always in the same location of the head
Worrisome neurologic symptoms
Headache that never goes away
Systemic symptoms
Evaluation through homeopathic case taking and assessment scales
Start Homoeopathic treatment along with general management
Improvement
Yes
No
Rule out other diagnosis: Hypertension and depression, metastatic cancer, SOL, temporal arteritis etc.
Continue Homoeopathic treatment and general management
Reassess care & continue treatment according to new diagnosis/symptomatology
Improvement
Yes
No
Consider for integrative care

CHAPTER 13

POST-OPERATIVE PAIN

POST-OPERATIVE PAIN

CASE DEFINITION

Pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage."[1] Post-operative pain is defined as acute pain, resulting from surgery, surgical procedures or trauma. It can be physiological or pathological and involve inflammatory reactions.[2]

CLASSIFICATION

Post-operative pain is generally classified into acute and chronic pain. Acute post-operative pain is defined as "pain occurring in surgical patients following a procedure".[3] If, after a surgical procedure, the resulting pain continues for at least two months, and other causes of the pain have been excluded, then this is termed as chronic post-operative pain.[4]

INCIDENCE/PREVALENCE

- More than 80% of patients who undergo surgical procedures experience acute post-operative pain and approximately 75% of those with post-operative pain report the intensity as moderate, severe, or extreme.[5,6]
- In India, only 30% of patients who undergo surgery report adequate post-operative pain relief.[7]
- Incidence of persistent post-operative pain also depends on variety of surgical procedures performed on patients. However, estimates vary widely; mastectomy 20–50%[8], amputation 50–85%[9], pelvic trauma 40-50%[10], cardiac surgery 30–55%[11], hernia repair 5–35%[12], and thoracotomy 5–65%.[13]

1 Merskey H, AlbeFessard D, Bonica JJ, Carmon A, Dubner R, et al. Pain terms: a list with definitions and notes on usage. Recommended by the IASP subcommittee on taxonomy. Pain Rep. 1979;6:249–52.
2 Masigati HG, Chilong KS. Postoperative pain management outcomes among adults treated at a tertiary hospital in Moshi, Tanzania. 2014; 16(1):47-53.
3 American society of anesthesiologists task force on acute pain management. Practice guidelines for acute pain management in the perioperative setting: an updated report by the American society of anesthesiologists task force on acute pain management. Anesthesiology. 2012;116(2):248-73.
4 Macare WA. Chronic pain after surgery. Br J Anaesth. 2001; 87(1): 88-98.
5 Apfelbaum JL, Chen C, Mehta SS, Gan TJ: Postoperative pain experience: Results from a national survey suggest postoperative pain continues to be undermanaged. Anesth Analg. 2003; 97(2):534-540.
6 Gan TJ, Habib AS, Miller TE, White W, Apfelbaum JL. Incidence, patient satisfaction, and perceptions of postsurgical pain: Results from a US national survey. Curr Med Res Opin. 2014; 30 (1):149-160.
7 Vijayan R. Managing acute pain in the developing world. Pain Clin Updat. 2011;19(3):1-7.
8 Poleshuck EL, Katz J, Andrus CH, Hogan LA, Jung BF, Kulick DI, et al. Risk factors for chronic pain following breast cancer surgery: a prospective study. J Pain. 2006; 7(9): 626–34.
9 Hanley MA, Jensen MP, Smith DG, Ehde DM, Edwards WT, Robinson LR. Pre-amputation pain and acute pain predict chronic pain after lower extremity amputation. J Pain. 2007; 8(2): 102–9.
10 Meyhoff CS, Thomsen CH, Rasmussen LS, Nielsen PR. High incidence of chronic pain following surgery for pelvic fracture. Clin J Pain. 2006; 22(2): 167–72.
11 Bar-El Y, Gilboa B, Unger N, Pud D, Eisenberg E. Skeletonized versus pedicled internal mammary artery: impact of surgical technique on post CABG surgery pain. Eur J Cardiothorac Surg. 2005; 27(6): 1065–9.
12 Lavand' homme P. 'Why me?' The problem of chronic pain after surgery. Br J Pain. 2017; 11(4): 162-165.
13 Pluijms WA, Steegers MAH, Verhagen AFTM, Scheffer GJ, Wilder-Smith OHG. Chronic post-thoracotomy pain: a retrospective study. Acta Anaesthesiol Scand. 2006; 50(7): 804–8.

- Inadequately controlled pain negatively affects quality of life, function, and functional recovery, risk of post-surgical complications, risk of persistent postsurgical pain,[14,15] prolonged hospital stays and overcrowding of wards, which consequently, adversely affect the quality of health care.[16]

FACTORS AFFECTING POST-OPERATIVE PAIN[17,18]

The intensity, quality and duration of post-operative pain is affected mainly by:

- Type of tissue involved in surgery
- Location, type, and duration of surgical procedure
- Type and extent of incision and surgical trauma
- Physical and mental state of patient including patient's personal approach to pain
- Pre-operative psychological and pharmacological preparation
- Type of anesthesia
- Pain management before and after surgical procedure
- Incidence of surgical complications
- Quality of post-operative care.

INTENSITY OF PAIN[19]

Based on intensity and duration, pain can be either severe, moderate or mild.

- *Severe pain lasting more than 48 hours*- generally seen after- surgical procedures of epigastrium, thorax, kidneys, hemorrhoids, rectum, major joints and bones with the exception of hips and spinal surgery.
- *Severe pain lasting less than 48 hours*- seen after cholecystectomy, prostatectomy, abdominal hysterectomy, and cesarean section.
- *Moderate pain lasting more than 48 hours*- seen in heart surgery, hip surgery, surgery of the larynx and pharynx.
- *Moderate pain of shorter duration*- seen after operations like appendectomy, inguinal hernia repair, vaginal hysterectomy, mastectomy, intervertebral disc surgery.
- *Mild pain*- seen in minor operations, such as gynecological procedures.

14 Kehlet H, Jensen TS, Woolf CJ. Persistent postsurgical pain: Risk factors and prevention. Lancet 2006; 367 (9522):1618-1625.
15 Roger Chou, Gordon DB, de Le-Casasola OA, Rosenberg JM, Bickler S, Brennan T, et al. Management of Postoperative Pain: A Clinical Practice Guideline From the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council. The Journal of Pain.2016;17(2):131-157.
16 Masigati HG, Chilonga KS. Postoperative pain management outcomes among adults treated at a tertiary hospital in Moshi, Tanzania. Tanzan J Health Res. 2014;16(1):47-53.
17 Gerbershagen HJ, Aduckathil S, van Wijck AJM, Peelen LM, Kalkman CJ, Meissner W. Pain intensity on the first day after surgery: a prospective cohort study comparing 179 surgical procedures. Anesthesiology. 2013;118(4):934-44.
18 Malek J, Ctrnacta E, Kurzova A. Patients' perioperative worries and experiences. RozhlChir. 2004;83(8):406-10.
19 Málek J, Ševčík P. Postoperative Pain Management [Internet]. Third updated edition Mladáfronta a.s., MeziVodami 1952/9;2017 [cited 2020 Mar 6]. Available from: https://www.coursehero.com/file/64426398/125136f77e1b7daf7565bd6653026c35-Postoperative-Pain-Management-170518pdf/

EFFECTS OF PAIN

Positive

Acute pain plays "positive" role by providing a warning sign of tissue damage and inducing immobilization to allow appropriate healing.[19]

Negative

- Emotional and physical suffering of the patient
- Sleep disturbance
- Cardiovascular side effects (such as hypertension and tachycardia)
- Increased oxygen consumption (with negative impact in the case of coronary artery disease)
- Impaired bowel movement
- Respiratory dysfunction (leading to atelectasis, retention of secretions and pneumonia) and delayed mobilization, which promotes chances of thromboembolism.[19]

DIAGNOSING PAIN[19]

Proper diagnosis of the type and intensity of pain is crucial for an adequate and targeted treatment of post-operative pain. The examination of post-operative pain includes medical history, physical examination, and specific evaluation of pain. During physical examination, one must not only focus on the site of maximum tenderness, but also on distant structures, which may be associated with the pain. Pain intensity, location, medical treatments, number of episodes, onset, position, quality, radiation, severity etc. can provide important diagnostic clues to known the mechanism of pain and decide personalized management.

A widely used method for assessing pain is the PQRST[20,21] method, which is easy to remember and a valuable tool to accurately describe, assess and document a patient's pain.

PQRST

P= Provocation/Palliation

This is assessed by the following questions**:**

- What were you doing when the pain started?
- What caused it?
- What makes it better or worse?
- What seems to trigger it? Stress? Position? Certain activities?
- What relieves it? Medications, massage, heat/cold, changing position, being active, resting?
- What aggravates it? Movement, bending, lying down, walking, standing?

20 Kernicki JG. Differentiating chest pain: advanced assessment techniques. Crit Care Nurs. 1993; 12(2):66–76
21 Gordon D. Acute pain assessment tools. Current Opinion in Anaesthesiology. 2015;28(5):565-569.

Q = Quality/Quantity

Patient may be asked the following for assessing the quality/quantity of pain for diagnostic reasons:

- What does it feel like?

Use words to describe the pain such as sharp, dull, stabbing, burning, crushing, throbbing, nauseating, shooting, twisting or stretching.

R = Region/Radiation

It's important to understand the location, and radiation of the pain. Ask the patient:

- Where is the pain located?
- Does the pain radiate? Where?
- Does it feel like it travels/moves around?
- Did it start elsewhere and is now localized to one spot?

S = Severity

For severity, the questions asked are:

- How severe is the pain on a scale of 0 to 10, with zero being no pain and 10 being the worst pain ever?
- Does it interfere with activities?
- How bad is it at its worst?
- Does it force you to sit down, lie down, slow down?
- How long does an episode last?

T = Timing

Sometimes, knowing when the pain started can be diagnostically important. One may ask:

- When/at what time did the pain start?
- How long did it last?
- How often does it occur: hourly? daily? weekly? monthly?
- Is it sudden or gradual?
- What were you doing when you first experienced it?
- Is it accompanied by other signs and symptoms?
- Does it ever occur before, during or after meals?
- Does it occur seasonally?

EVALUATION AND ASSESSMENT

Assessment of pain is a vital element in effective management of the post-operative pain. Following general recommendations and principles for successful pain management may be followed for evaluation:[19]

Principles of successful pain assessment

- Assess pain both at rest and on movement to evaluate patient's functional status.
- Assess the effect of a given treatment (before and after intervention).
- In the surgical Post Anaesthesia Care Unit (PACU), or other circumstances where pain is intense; evaluate, treat, and re-evaluate frequently (e.g., every 15 minutes initially, then every 1-2 hours, as pain intensity decreases).
- In the surgical ward, evaluate, treat, and re-evaluate regularly (e.g., every 4-8 hours)- both intensity of pain and patient's response to treatment.
- Define maximum pain score above which pain relief is offered (the intervention threshold). For example, verbal ratings score of 3 at rest and 4 on moving, on a 10-point scale.
- Pain and response to treatment, including adverse effects, should be documented clearly in easily accessible forms, such as the vital sign sheet. This is useful for treatment, good communication between staff, auditing and quality control.
- Patients who have difficulty in communicating their pain require particular attention. This includes patients who are cognitively impaired, severely emotionally disturbed, children, patients who can not speak the local language, and patients whose level of education or cultural background differ significantly from that of their health care team.
- Unexpected intense pain, particularly if associated with altered vital signs (hypotension, tachycardia, or fever), is immediately evaluated. New diagnoses, such as wound dehiscence, infection, or deep venous thrombosis, should be considered.
- Immediate pain relief, without asking for a pain rating, is given to patients with pain, who are not sufficiently focused to use a pain rating scale.
- Family members are involved when required.

Specific tools for pain assessment

A. *Facial expressions:* This scale is suitable for patients where verbal communication is a problem. Faces Pain Scale Revised[22,23], Wong-Baker FACES pain rating scale[24] and Oucher scale[25] are usually used in post-operative pain assessment.

B. *Verbal rating scale (VRS):* The patient is asked to rate his/her pain on a five-point scale as "none, mild, moderate, severe or very severe", Four-point VRS [26], Seven-point Graphic Rating Scale[27], and a Six-point Present Pain Inventory (PPI).[28,29]

22 Bieri D, Reeve RA, Champion GD, Addicoat L, Ziegler JB. The faces pain scale for the self-assessment of the severity of pain experienced by children: Development, initial validation, and preliminary investigation for ratio scale properties. Pain. 1990;41(2):139-150.
23 Faces Pain Scale - Revised (FPS-R) [Internet]. 2001 [Cited on 2020 January 17] Available from: http:// www.iasp pain.org/files/Content/ Content Folders/Resources 2/FPSR/FPS-R_English.pdf
24 Wong DL, Baker CM. Pain in children. Comparison of assessment scales. Pediatr Nurs. 1988;14(1):9-17.
25 Beyer JE, Denyes MJ, Villarruel AM. The creation, validation, and continuing development of the Oucher: A measure of pain intensity in children. J Pediatr Nurs. 1992;7(5):335-346.
26 Closs SJ, Barr B, Briggs M, Cash K, Seers K. A comparison of five pain assessment scales for nursing home residents with varying degrees of cognitive impairment. J Pain Symptom Manage. 2004;27(3):196-205.
27 Bergh I, Sjostrom B, Oden A, Steen B. An application of pain rating scales in geriatric patients. Aging Clin Exp Res. 2000;12(5): 380-387.
28 Gagliese L, Katz J. Age differences in postoperative pain are scale dependent: A comparison of measures of pain intensity and quality in younger and older surgical patients. Pain. 2003;103(1-2):11-20.
29 Melzack R, Katz J, Coderre TJ. Methods of postoperative pain control. Cah Anesthesiol. 1992;40(5):309-315.

C. *Numerical rating scale (NRS):* This consists of a simple 0 to 5 or 0 to 10 scale which correlates to no pain at zero and worst possible pain at 5 (or 10).[30,31]

D. *Visual analogue scale (VAS):* This consists of an ungraduated, straight 100 mm line marked at one end with the term " no pain" and at the other end "the worst possible pain".[32,33,34]

E. *Post-operative Quality of Recovery Scale (PQRS):* This questionnaire is an accepted tool used for self-assessment of patients' quality of recovery after surgery. It addresses multiple domains, including nociception, emotion, day to-day activities, cognition and satisfaction and each domain comprises a series of questions.[35]

CONSEQUENCES OF POSTOPERATIVE PAIN

1. Morbidity

Inadequately managed postoperative pain is usually associated with both physiological and psychological dysfunction.[36,37] Changes can occur in diverse organ systems, including the cardiovascular (coronary ischemia, myocardial infarction), pulmonary (hypoventilation, decreased vital capacity, pulmonary infection), gastrointestinal (reduced motility, ileus, nausea, vomiting), and renal (increases in urinary retention and sphincter tone, oliguria) systems. A negative impact may also be seen on immune function, the muscular system, coagulation, and wound healing, and negative psychological effects, such as demoralization and anxiety.[38]

2. Impaired function, recovery, and quality of life

Postoperative pain also adversely affects physical functioning, recovery, and quality of life[39, 40] and its impact is correlated with the severity of pain.[41]

3. Prolonged opioid use/opioid-induced adverse events

The consequences of poorly controlled pain during or after surgery may also include adverse effects of and toxicity related to anesthetic/analgesic medications, particularly if required for prolonged

30 Morrison RS, Ahronheim JC, Morrison GR, Darling E, Baskin SA, Morris J, et al. Pain and discomfort associated with common hospital procedures and experiences. J Pain Symptom Manage. 1998;15(2):91-101.
31 Gagliese L, Weizblit N, Ellis W, Chan VWS. The measurement of postoperative pain: A comparison of intensity scales in younger and older surgical patients. Pain. 2005;117(3):412-420.
32 DeLoach LJ, Higgins MS, Caplan AB, Stiff JL. The visual analog scale in the immediate postoperative period: intrasubject variability and correlation with a numeric scale. Anesth Analg. 1998; 86(1):102–6.
33 Gudex C, Dolan P, Kind P, Williams A. Health state valuations from the general public using the Visual Analogue Scale. Quality of Life Research. 1996; 5(6): 521-531.
34 Flaherty SA. Pain measurement tools for clinical practice and research. Journal of the American Association of Nurse Anesthetists. 1996; 64(2): 133-140.
35 Royse CF, Newman S, Chung F, Stygall J, McKay RE, Boldt J, et al. Development and feasibility of a scale to assess postoperative recovery: the post-operative quality recovery scale. Anesthesiology. 2010;113(4):892-905.
36 Breivik H. Postoperative pain management: why is it difficult to show that it improves outcome? Eur J Anaesthesiol. 1998;15(6):748–751.
37 Joshi GP, Ogunnaike BO. Consequences of inadequate postoperative pain relief and chronic persistent postoperative pain. Anesthesiol Clin North America. 2005;23(1):21–36.
38 Gan TJ. Poorly controlled postoperative pain: prevalence, consequences, and prevention. Journal of Pain Research. 2017;10:2287–2298.
39 VanDenKerkhof EG, Hopman WM, Reitsma ML, Goldstein DH, Wilson RA, Belliveau, et al. Chronic pain, healthcare utilization, and quality of life following gastrointestinal surgery. Can J Anaesth. 2012;59(7):670–680.
40 Peters ML, Sommer M, de Rijke JM, Kessels F, Heineman E, Patijin J, et al. Somatic and psychologic predictors of long-term unfavorable outcome after surgical intervention. Ann Surg. 2007;245(3):487–494.
41 Wu CL, Naqibuddin M, Rowlingson AJ, Lietman SA, Jermyn RM, Fleisher LA. The effect of pain on health-related quality of life in the immediate postoperative period. AnesthAnalg. 2003;97(4):1078–1085.

periods or at elevated doses to relieve pain. Although opioid analgesics remain the mainstay of postoperative pain therapy for efficacy, their use may be limited by potentially harmful effects. Common opioid-related AEs include respiratory depression, nausea, vomiting, pruritus, and bowel dysfunction, which have been associated with a substantial burden on quality of life.[42]

4. **Health economic impact**

Inadequate pain relief has been shown to result in increased length of stay, time to discharge, readmission rates, and time before ambulation all of which can increase cost of care.[43,44]

MANAGEMENT

Two main approaches can be adopted for managing post-operative pain: Use of pharmacological intervention, and non-pharmacological approach.[45] The non-pharmacological methods are non-drug methods used to relieve pain. This can be divided into two main groups:

1. **Psychological methods**

a) *Humour or Laughter* is the most effective way of relieving pain compared to other self-initiated noninvasive methods.[46] Laughter has been described as internal jogging, promoting hope and optimism. Its use as a method of pain relief in the immediate post-operative period is not well documented.

b) *Relaxation* is widely researched as a psychological method of acute pain control. Distress, which is part of the psychological perception of pain, is commonly reduced through the use of relaxation techniques even though the perceived level of pain remains the same. Results have shown relaxation to reduce muscular tension and increase comfort levels in postoperative patients as well as reduce the amount of analgesia used in the first 24 h postoperatively.[47]

c) *Distraction* is not designed to make the pain disappear but rather to make it more bearable, by replacing it with another focus of attention, thus increasing pain tolerance.[48]

d) *Music* has also been suggested as a means of reducing patients' isolation and anxiety.[49]

e) *Guided imagery,* a technique in which an experienced practitioner helps a patient provoke a state of mind or mental images in the absence of that stimuli, through metaphor and storytelling. It helps to elicit a physiological response, through modulations at the level of

42 Dahan A, Aarts L, Smith TW. Incidence, reversal, and prevention of opioid-induced respiratory depression. Anesthesiology. 2010;112(1): 226–238.
43 Twersky R, Fishman D, Homel P. What happens after discharge? Return hospital visits after ambulatory surgery. Anesth Analg. 1997;84(2):319–324.
44 Coley KC, Williams BA, DaPos SV, Chen C, Smith RB. Retrospective evaluation of unanticipated admissions and readmissions after same day surgery and associated costs. J Clin Anesth. 2002;14(5):349–353.
45 Czarnecki ML, Turner HN, Collins PM, Doellman D, Wrona S. Procedural Pain Management: A position statement with clinical practice recommendations. Pain Management Nursing. 2011;12(2): 95–111.
46 Fritz D J. Noninvasive pain control methods used by cancer outpatients. Oncology Nurses Forum (suppl) 1988:108.
47 Flaherty GG, Fitzpatrick JJ. Relaxation technique to increase comfort levels of postoperative patients; a preliminary study. Nursing Research. 1978;27(6): 352-355.
48 McCaffery M. Nursing approaches to nonpharmacological pain control. International Journal of Nursing Studies. 1990;27(1):1-5.
49 Magill-Levreault L. Music Therapy in Pain and Symptom Management. J Palliat Care. 1993; 9(4):42-8.

the autonomic nervous system, such effects would result in changes of the cardiovascular, respiratory, nervous, endocrine and even immune system.[50]

f) *Cognitive behavioral therapy (CBT)* helps to develop important set of coping skills intended to improve psychological functioning, including behavioral activation, structured relaxation exercises, recalling and scheduling of pleasurable events, dogmatic assertive communication, and behavior pacing aiming to avoid prolongation and/or exacerbation of flares of pain.[51]

g) *Hypnosis* is phenomena which includes change in consciousness and memory, and susceptibility to suggestions, reactions, and thoughts. It is applied in perioperative care procedures to induce a non-pharmacological sedation and reduces anxiety.[19]

2) Physical approaches

a) *Cold* increases the threshold of pain, reduces local swelling and muscle spasm. It is used for a limited period of time after tooth extraction, small surgical procedures on the knee; minor incisions, etc. Long-term application is unpleasant and may cause trauma.[19]

b) *Heat* relaxes muscle spasms and improves joint mobility. It is not used in the treatment of acute post-operative pain, as it increases the risk of bleeding and edema formation.[52]

c) *Immobilization* reduces pain, but prolonged immobilization is not desirable due to an increased risk of deep venous thrombosis, pressure sores, muscle wasting, and complex regional pain syndrome.[19]

d) *Massage* mechanically improves blood supply, lymphatic drainage, reduces sensitization of tissues, and has an overall positive psychological effect.[53, 54]

e) *Transcutaneous electrical nerve stimulation (TENS)* is a method based on the gate control theory of pain. Using skin electrodes, nerve fibers are stimulated by a defined electrical current. TENS has been used as an adjuvant method, which may lead to reduced consumption of analgesics after surgery, enhanced rehabilitation, improved lung function, blood perfusion in both the stimulated and distant dermatomes, and increased patient satisfaction with the treatment. TENS is effective mainly in treating mild pain, e.g., after inguinal hernia repair and laparoscopic cholecystectomy, but not after open cholecystectomy. Disadvantages include the need to purchase the device, use of electrodes and patient education.[55]

f) *Rehabilitation* improves post-operative course, shortens recovery time and hospital stay and prevents complex regional pain syndrome.[19]

50 El Geziry A, Toble Y, Al Kadhi F, Pervaiz M, Al Nobani M. Non-Pharmacological Pain Management. In: Pain Management in Special Circumstances [Internet]. 2018 [cited on 2021 March 16]. Available from: https://www.intechopen.com/books/pain-management-in special-circumstances/non-pharmacological-pain-management

51 Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: Model, processes and outcomes. Behaviour Research and Therapy. 2006;44(1):1-25.

52 Chandler A, Preece J, Lister S. Using heat therapy for pain management (clinical practice). Nursing Standard. 2002;17(9):40-2.

53 Kutner JS, Smith MC, Corbin L, Hemphill L, Benton K, Mellis BK, et al. Massage therapy versus simple touch to improve pain and mood in patients with advanced cancer: A randomized trial. Annals of Internal Medicine. 2008;149(6):369-79.

54 Ward CW. Non-pharmacologic methods of postoperative pain management. Med Surg Matters. 2016;25(1):9-10

55 Carroll D, Tramèr M, McQuay H, Nye B, Moore A. Transcutaneous electrical nerve stimulation in labour pain: a systematic review. Br J Obstet Gynaecol. 1997;104(2):169-75.

g) *Acupuncture* has been used for around 5000 years, and it is considered one of the world's oldest arts of an empiric body healing. Basically, acupuncture works by putting the needle in specific region of the body, which stimulates the nerve. Each needle will cause no discomfort to little discomfort to the patient, but it will produce a small injury at the insertion area which will stimulate the body and the immune system to increase circulation, wound healing, pain modulation and pain analgesia.[56]

Homoeopathic management

Post-operative pain continues to be inadequately managed in a surprising proportion of patients, and is associated with numerous negative clinical, patient-reported, and health economic outcomes. Poorly controlled acute pain after surgery has consistently been shown to be a predictive factor for the development of chronic pain. Homoeopathy may help to prevent the adverse consequences of poorly controlled pain, including its transition to persistent pain. It may be used as an adjuvant to main therapy, to reduce patient anxiety and improve satisfaction with treatment. Evidence-based findings support the use of *Arnica montana*[57,58] before and after surgery. It can reduce bruising, swelling, soreness, and pain. *Symphytum*[59] may be effective to reduce pain and swelling after dental implants. *Calendula* and *Hypericum*[60] can help to promote wound healing and reduce nerve pain.

The Complete Repertory[61] enlists 25 medicines for managing post-operative pains under the rubric 'GENERALITIES - PAIN - operations, after', 'PAIN- neuralgic - operations, after surgical' and 'WOUNDS - painful - operation, after'. Similar rubrics are also found in different chapters such as Eyes, Ears, Nose, Teeth, Throat, Chest, Abdomen and back in different repertories such as Clarke's Clinical Repertory, Phatak and Synthesis repertories.

Homoeopathic medicines[62, 63, 64] commonly prescribed in post-operative pain are as follows:

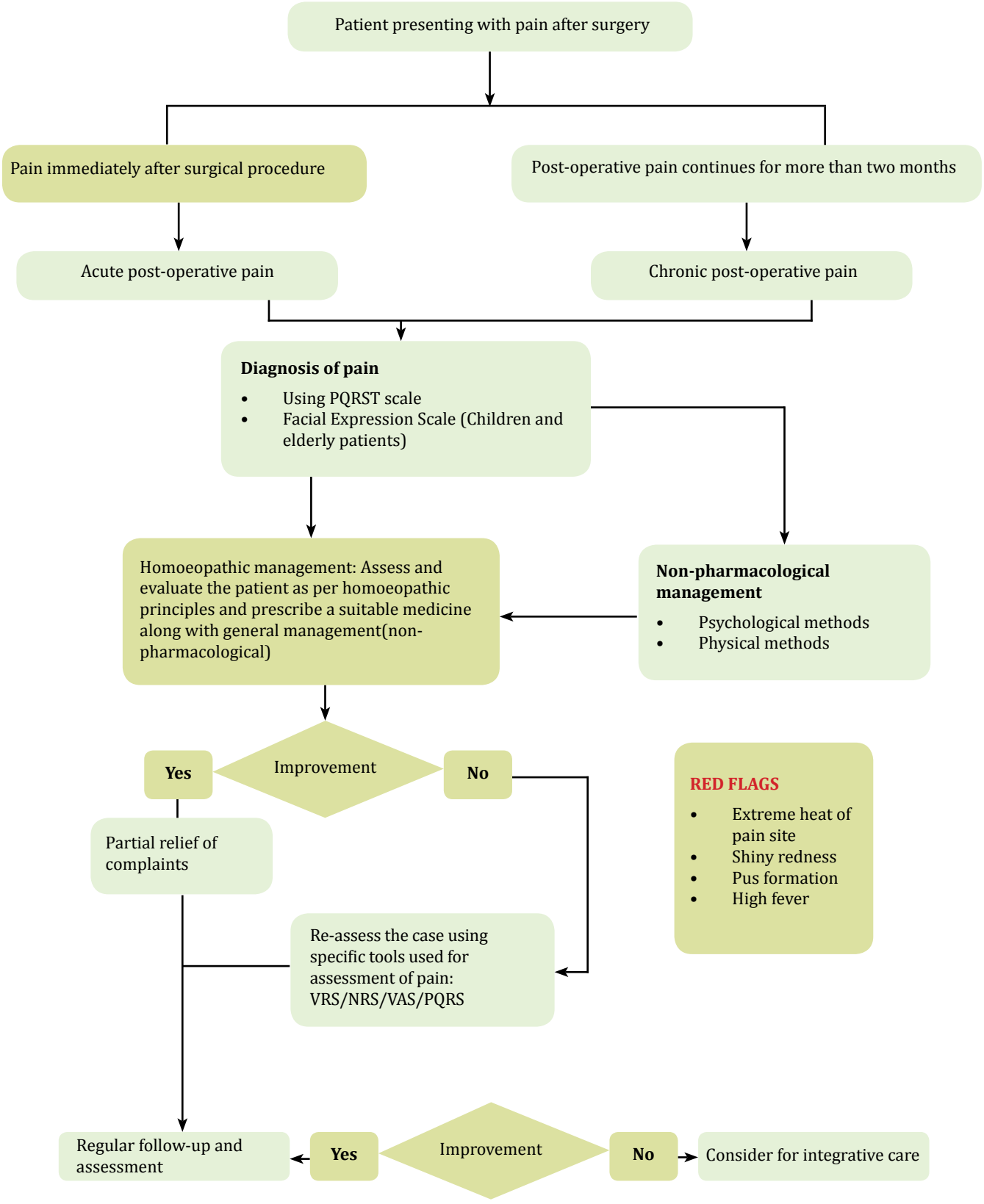
Medicines	Specific indications
Abrotanum	After surgery, for hydrothorax or empyema, a pressing sensation remains
Allium cepa	Neuralgic pains, like a fine thread, following amputations or injuries to nerves. Traumatic chronic neuritis. Neuralgia of stump
Ammonium muriaticum	Neuralgic pains in amputated limbs

56 White A, Editorial Board of Acupuncture in Medicine. Western medical acupuncture: A definition. Acupuncture in Medicine. 2009;27(1):33-5.
57 Robertson A, Suryanarayanan R, Banerjee A. Homeopathic Arnica montana for post-tonsillectomy analgesia: A randomised placebo control trial. Homeopathy. 2007;96(1):17–21.
58 Lannitti T, Morales-Medina JC, Bellavite P, Rottigni V, Palmieri. Effectiveness and safety of Arnica montana in post-surgical setting, pain, and inflammation. Am J Ther. 2016;23(1):e184–197.
59 Mazzocchi A, Montanaro F. Observational study of the use of Symphytum 5CH in the management of pain and swelling after dental implant surgery. Homeopathy. 2012;101(4):211–216.
60 Hostanska K, Rostock M, Melzer J, Baumgartner S, Saller R. A homeopathic remedy from Arnica, marigold, St. John's wort and comfrey accelerates in vitro wound scratch closure of NIH 3T3 fibroblasts. BMC Complement Altern Med. 2012;12:100.
61 Zandvoort RV. Complete Repertory 2019. Available from: https://www.completedynamics.com/; last accessed on Oct 15, 2020.
62 Allen HC. Allen's Keynotes- Rearranged and classified with leading remedies of the Materia Medica and Bowel Nosodes. 10th edition. New Delhi: B. Jain Publishers (P) Ltd; 2005.
63 Boericke W. New Manual of Homeopathic Materia Medica with Repertory. Third Revised & Augmented Edition. New Delhi: B. Jain Publishers (P) Ltd; 2007.
64 Phatak SR. Materia Medica Of Homoeopathic Medicines. 2nd edition. New Delhi: B. Jain Publishers (P) Ltd; 1999.

Medicines	Specific indications
Arnica montana	Septic conditions; prophylactic of pus infection. Any injury, however remote, seems to have caused the present trouble. After traumatic injuries, overuse of any organ, strains. Sore, lame, bruised feeling. Neuralgias originating in disturbances of pneumo-gastric nerve. Soreness of gums after tooth extraction. Useful immediately after surgery to resolve the hematomas and initiate the process of healing
Asarum europaeum	Darting pains in eyes after surgery. Better, in cold air or when water is applied; worse, sunlight and wind
Bismuthum	Pains are tearing, pinching, burning, screwing. Affections after abdominal operation
Bellis perennis	First remedy in injuries to the deeper tissues, after major surgical work. Results of injuries to nerves with intense soreness and intolerance of cold bathing
Berberis vulgaris	Post-operative pain in lumbar region; soreness with sharp pain following course of circumflex iliac nerve to bladder with frequent urination. Chest affected after operation for piles, fistula, etc. Pains rapidly change their locality and character
Calendula officinalis	Almost specific for clean, surgical cuts or lacerated wounds, to prevent excessive suppuration. Neuritis from lacerated wounds; exhausted from loss of blood and excessive pain Useful for open wounds, parts that will not heal, ulcers, etc. Promotes healthy granulations and rapid healing by first intention. Pain is excessive and out of proportion to the injury. Hemostatic after tooth extraction. Injuries to the eyes which tend to suppurate; after surgery
China officinalis	Post-operative gas pains, no relief from passing it.
Colocynthis	Cystospasm following operations on orifices
Crocus sativus	Crawling and stitches in the anus. Gastric troubles, bloatedness, eructations, vomiting, etc. after operation for hemorrhoids
Ferrum phosphoricum	After surgery of throat and nose to control bleeding and to relieve soreness.
Hypericum perforatum	Excessive painfulness is a guiding symptom to its use. Relieves pain after operations. Quite supersedes the use of morphia after operations. Has marked action on nerve injuries and pain due to it. After spinal anaesthesia
Mezereum	Ciliary neuralgia after surgery especially after removal of eyeball
Naja tripudians	Neuralgia of left ovary; often serviceable in obscure pains of left groin, especially in post-operative cases; seems to be drawn to the heart
Opium	Paralytic atony of bowels, after laparotomy. Violent pain in rectum as if pressed asunder
Phosphoricum acidum	Neurosis in stump, after amputation. Great debility. Pains at night as if bones were scraped. Boring, drawing, digging pains in nerves of extremities; necrosis in stump after amputations
Populus tremuloides	A good remedy for vesical problems of the bladder after surgery and in pregnancy. Severe tenesmus; dysuria scalding. Urine contains mucus and pus. Pain behind the pubis, at end of micturition
Raphanus sativus	Post-operative gas pains

Medicines	Specific indications
Rhus toxicodendron	Rhus affects fibrous tissue markedly-joints, tendons, sheaths-aponeurosis, etc., producing pains and stiffness. Post-operative complications. Pains tearing asunder. Motion always "limbers up" the Rhus-t. patient, and hence he feels better for a time from a change of position. Septic conditions
Staphysagria	Mechanical injuries from sharp-cutting instruments; post-surgical operations; stinging, smarting pains, like the cutting of a knife
Strontium carbonicum	Pains make patient faint or sick all over. Chronic sequelae of hemorrhages, after surgery with much oozing of blood, coldness and prostration. For shock after surgery. Neuritis, great sensitiveness to cold
Symphytum	Of great use in wounds penetrating the perineum and bones, and in non-union of fractures; irritable stump after amputation, irritable bone at point of fracture. Pricking pain and soreness of periosteum. Stimulates the growth of epithelium on ulcerated surfaces. Pricking, stitching pains; remaining after wound is healed, worse by touch. External application disposes the swelling, due to injury or other growths
Zincum metallicum	Tissues are worn out faster than they are repaired. The nervous symptoms of most importance. Defective vitality. Period of depression in disease. Pain, as if between skin and flesh. Great relief from discharges. It causes a decrease in the number, and destruction of red blood corpuscles

ALGORITHM OF TREATMENT PROCESS FOR POST-OPERATIVE PAIN


Patient presenting with pain after surgery
Pain immediately after surgical procedure
Post-operative pain continues for more than two months
Acute post-operative pain
Chronic post-operative pain
Diagnosis of pain
Using PQRST scale
Facial Expression Scale (Children and elderly patients)
Homoeopathic management: Assess and evaluate the patient as per homoeopathic principles and prescribe a suitable medicine along with general management(non-pharmacological)
Non-pharmacological management
Psychological methods
Physical methods
Yes
Improvement
No
Partial relief of complaints
Re-assess the case using specific tools used for assessment of pain: VRS/NRS/VAS/PQRS
RED FLAGS
Extreme heat of pain site
Shiny redness
Pus formation
High fever
Regular follow-up and assessment
Yes
Improvement
No
Consider for integrative care

CHAPTER 14

RHEUMATOID ARTHRITIS

RHEUMATOID ARTHRITIS

CASE DEFINITION[1,2]

Rheumatoid Arthritis (RA) is a progressive, disabling, chronic multisystem disease characterized by pain, swelling and stiffness of the synovial joints, often worse in the morning and after periods of inactivity. It exhibits symmetrical, destructive and deforming polyarthritis affecting small and large synovial joints with extra-articular manifestations, including fatigue, subcutaneous nodules, lung involvement, pericarditis, peripheral neuropathy, vasculitis, and hematologic abnormalities. It is associated with systemic disturbance and presence of circulating antiglobulin antibodies.

INCIDENCE / PREVALENCE

- RA affects approximately 0.3–1% of the adult population worldwide with a peak onset of the disease between 40 years and 70 years of age and the prevalence rises with age.[3]
- It can also afflict young children even before the age of 16 years, referred to as juvenile RA (JRA), which is similar to RA except that rheumatoid factor is not found.[4]
- It occurs more commonly in females than in males with a ratio of 3:1.[2]

ETIOLOGY[1,2,5]

Rheumatoid arthritis (RA) is a disease of unknown origin, which is characterized by inflammatory changes of the synovial tissues of joints, cartilages and bones and, less frequently, of extra-articular sites. In recent years, it has become evident that RA is based on genetic and epigenetic components, but the environment also plays an important role such as cigarette smoke, dust exposure and especially the microbiome that also represents an "internal" environment. Most of this risk is associated with allelic variation in the HLA-DRB1 gene, which encodes the MHC II beta-chain molecule. Also, agents such as mycoplasma, clostridium and some viruses (Epstein-Barr virus, parvovirus) have been implicated in its etiology.

RISK FACTORS[6]

Increased risk	Decreased risk
• Female sex	• Fish and omega 3 fatty acid consumption
• Exposure to tobacco smoke	• Moderate alcohol intake
• Air pollution	• Healthy diet

1 Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL, editors. Harrison's Principles of Internal Medicine.17th edition vol. 2. New York: McGraw Hill; 2008: p. 1968-77.

2 Colledge NR, Walker BR, Ralston SH, editors. Davidson's principle & practice of Medicine. 22nd ed. New York: Churchill Livingstone, Elsevier, London. 2014: p 1096- 1103.

3 Løppenthin K, Esbensen B A, Østergaard M, Ibsen R, Kjellberg J, Jennum P. Morbidity and mortality in patients with rheumatoid arthritis compared with an age- and sex-matched control population: A nationwide register study. J Comorb. 2019; 9: 223.

4 Bullock J, Rizvi SAA, Saleh AM, Ahmed SS, Do DP, Ansari RA, et al. Rheumatoid Arthritis: A Brief Overview of the Treatment. Med Princ Pract. 2018;27(6):501–507.

5 Scherer HU, Haupl T, Burmester GR. The etiology of rheumatoid arthritis. Journal of Autoimmunity [Internet]. 2019 [Cited on 2021 March 8]. Available from: https://doi.org/10.1016/j.jaut.2019.102400

6 Deane KD, Demoruelle MK, Kelmenson LB, Kuhn KA, Norris JM, Holers VM. Genetic and environmental risk factors for rheumatoid arthritis. Best Pract Res Clin Rheumatol. 2017; 31(1): 3–18.

• Occupational dust (silica)	• Statin use
• High sodium, red meat and iron consumption	• Oral contraceptive use/ hormone replacement
• Obesity	
• Low vitamin D intake level	

PATHOGENESIS[7]

Rheumatoid arthritis (RA) is characterized by persistent joint inflammation leading to cartilage and bone damage, disability and eventually resulting in systemic complications. The progression of the disease may lead to loss of functionality, reduce quality of life and enhance morbidity and mortality. RA pathogenesis is the result of a complex interaction between genetic and environmental factors, inducing the aberrant activation of innate and adaptative immune system which cause the breakdown of immune tolerance, autoantigen presentation with antigen specific T and B cells activation and aberrant inflammatory cytokines production.

The initial disease stage of RA is associated with alteration of immune system with consequent production of autoantibodies, targeting various molecules including modified self-epitopes. In the following stages of the disease, both the innate (e.g., dendritic cells, macrophages and neutrophils) and adaptive immune cells (e.g., B and T lymphocytes) contribute to the amplification and perpetuation of the chronic inflammatory state. The cascade of events leads to synovitis, proliferation of synovia and cartilage and subchondral bone destruction. [8] (Figure 1)

ACPAs (Anti-Citrullinated Protein/Peptide Antibody) can be detected in approximately 67% of RA patients and serve as a useful diagnostic reference for patients with early, undifferentiated arthritis.

The intestinal tract is another mucosal organ implicated in the pathogenesis of RA because dysbiosis in RA patients can result from the abundance of certain rare bacterial lineages. It is well documented that gut microbiota may contribute to the pathogenesis of RA via multiple molecular mechanisms.[8]

Stages in pathogenesis of RA

(i) Triggering stage
(ii) Maturation stage
(iii) Targeting stage
(iv) Fulminant stage

7 Calabresi E, Petrelli F, Bonifacio AF, Puxeddu I, Alunno A. One year in review 2018: pathogenesis of rheumatoid arthritis. Clin Exp Rheumatol. 2018; 36(2): 175-184.

8 Guo Q, Wang Y, Xu D, Nossent J, Pavlos NJ, Xu J. Rheumatoid arthritis: pathological mechanisms and modern pharmacologic therapies. Bone Res. 2018; 6: 15. Available from: https://doi.org/10.1038/s41413-018-0016-9

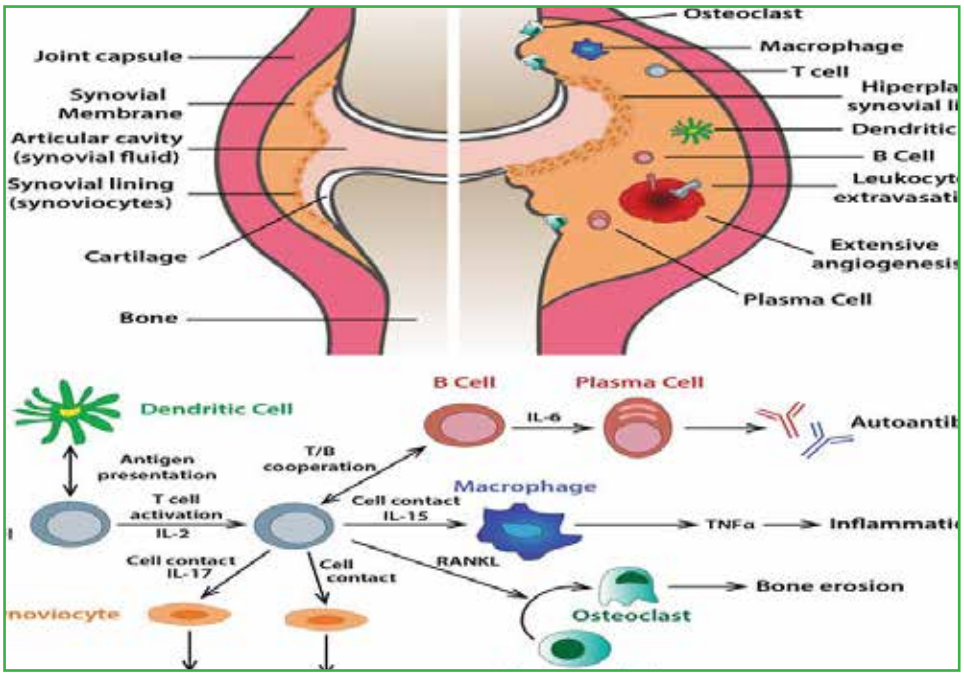


Figure 1: Pathogenesis of RA[9]

DIAGNOSIS[1,2,4]

The clinical diagnosis of RA is largely based on signs and symptoms of a chronic inflammatory arthritis, with laboratory and radiographic results. 2010 American College of Rheumatology criteria (ACR) is used for early diagnosis of RA.

The presence of radiographic joint erosions or subcutaneous nodules may confirm the diagnosis in the later stages of the disease.

These criteria do not take into account whether the patient has rheumatoid nodules or radiographic joint damage because these findings occur rarely in early RA.

ACR/ EULAR diagnostic criteria for RA (2010)*

Criterion	Score
Joint affected	
1 large joint	0
2-10 large joints	1
1-3 small joints	2
4-10 small joints	3
>10 joints including at least one small joint	5
Serology	

9 Sanchez PC, Novarro PR. Physiology and pathology of Autoimmune Diseases: Role of CD4+T cells in Rheumatoid Arthritis. Intechopen. In: Rezaei N, editor. Physiology and pathology of immunology. [Internet]. 2017 [Cited on 2021 March 8]. Available from: http://dx.doi.org/10.5772/intechopen.70239

Negative RF and ACPA	0
Low positive RF and ACPA	2
High positive RF and ACPA	3
Duration of symptoms	
<6 weeks	0
>6 weeks	1
Acute phase reactants	
Normal CRP and ESR	0
Abnormal CRP or ESR	1
Patients with a score ≥ 6 are considered to have definite RA	
*European League Against Rheumatism/ 2010 American College of Rheumatology criteria (RF= Rheumatoid factor, ACPA= Anti- Citrullinated Peptide Antibody; CRP= C- Reactive protein; ESR = Erythrocyte Sedimentation Rate)	

Clinical presentation[1,2,4]

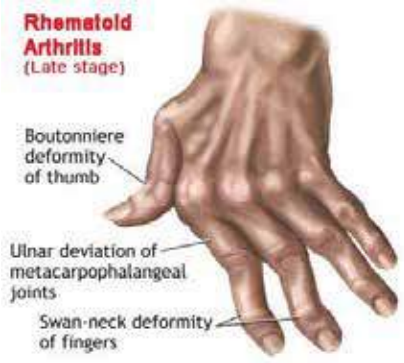
The typical presentation is with pain, swelling and morning stiffness affecting the small joints of hands, feet, and wrists. The most frequently involved joints are wrists, metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joints. However, distal interphalangeal (DIP) joint involvement may occur in RA, but it usually is a manifestation of co-existent osteoarthritis.[4] Flexor tendon tenosynovitis is a frequent hallmark of RA and leads to decreased range of motion, reduced grip strength, and 'trigger' fingers.[1]

Signs/ Symptoms

- Joint pain
- Early morning joint stiffness lasting for more than 1 hour that eases with physical activity
- Joint tenderness
- Swelling of joint
- Redness of joint
- Limited range of motion.

The typical deformities exhibited in RA are as follows:

- Ulnar drift of the hand
- Boutonniere deformity
- Swan neck deformity
- Flexion deformity
- Hallux valgus
- Hammer toe etc.



RA may result in a variety of extra-articular manifestations during its clinical course, even prior to the onset of arthritis. Some extra-articular manifestations are as follows:[1,2,10]

Extra-articular manifestations	
• *Systemic*	• Fever • Weight loss • Fatigue • Susceptibility to infection
• *Musculoskeletal*	• Muscle wasting • Tenosynovitis • Bursitis • Osteoporosis
• *Haematological*	• Anaemia • Thrombocytosis • Neutropenia • Eosinophilia • Lymphoma
• *Neurological*	• Cervical myelopathy • Peripheral neuropathy • Cervical cord compression
• *Occular*	• Keratoconjunctivitis sicca • Episcleritis • Scleritis
• *Lymphatic*	• Felty syndrome • Splenomegaly
• *Cardiac*	• Pericarditis • Myocarditis • Endocarditis • Ischemic heart disease
• *Pulmonary*	• Nodules • Pleural effusion • Bronchiolitis • Interstitial lung disease
• *GI*	• Vasculitis
• *Endocrine*	• Hypoandrogenism
• *Skin*	• Rheumatoid nodules • Purpura • Pyoderma gangrenosum

10 Das S, Padhan P. An Overview of the Extraarticular Involvement in Rheumatoid Arthritis and its Management. J Pharmacol Pharmacother. 2017;8(3):81–86.

INVESTIGATIONS [1,2,11]

Investigation	Findings
RF (Rheumatoid Factor)	• Positive • RF is a relatively good biomarker for establishing the diagnosis of RA.
ACPA (Anti- Citrullinated Peptide Antibody)	• Positive • It is highly sensitive and specific serological marker of RA.
CRP (C-Reactive Protein)	Elevated
ESR (Erythrocyte Sedimentation Rate)	Elevated
X-ray	It shows reduced joint space, erosion of articular margins, subchondral cysts, juxta-articular rarefaction, soft tissue shadow at the level of the joint because of joint effusion or synovial hypertrophy, deformities of hand and fingers.
MRI (Magnetic Resonance Imaging)	Detects erosions earlier than an X-ray
Ultrasound	Ultrasound (US) is able to provide high resolution multiplanar images of soft tissue, cartilage and bone profiles.

EVALUATION AND ASSESSMENT [12,13,14,15,16]

I. Assessment of quality of life

- *HAQ-DI (Health Assessment Questionnaire-Disability Index):*[12] It is a valid, reliable, and widely used tool to measure functional status in RA patients.
- *RAQoL (Rheumatoid Arthritis Quality of Life Questionnaire):*[13] It is a valid instrument for measuring quality of life in different populations of patients with RA.

II. Assessment of disease activity[14,15,16]

Disease activity is based on validated scales which are obtained from the tender joint count, swollen joint count, global patient assessment, physician global assessment, and/or marker of inflammation. These are:

- *DAS28-ESR (Disease Activity Score):* The Disease Activity Score (DAS) 28 is a scoring of 28 tender or swollen joints, a patient global assessment, and a physician global assessment on VAS (in mm), along with ESR.
- *DAS28-CRP (Disease Activity Score):* The Disease Activity Score (DAS) 28 is a scoring of 28 tender or swollen joints, a patient global assessment, and a physician global assessment, along with CRP.

11 Šenolt L, Grassi W, Szodoray P. Laboratory biomarkers or imaging in the diagnostics of rheumatoid arthritis? BMC Med. 2014;12:49.
12 Nakajima A, Aoki Y, Terayama K, Sonobe M, Takahashi H, Saito M, et al. Health assessment questionnaire-disability index (HAQ-DI) score at the start of biological disease-modifying antirheumatic drug (bDMARD) therapy is associated with radiographic progression of large joint damage in patients with rheumatoid arthritis. Mod Rheumatol. 2017; 27(6):967-972.
13 Heaney A, Stepanous J, Rouse M, McKenna SP. A Review of the psychometric properties and use of the Rheumatoid Arthritis Quality of Life Questionnaire (RAQoL) in Clinical Research. Current Rheumatology Reviews. 2017;13(3):197-205.
14 Machold KP. Prevention and cure of rheumatoid arthritis: is it possible? Best Prac Res Clin Rheumatol. 2010;24(3):353-361.
15 Muñoz JGB, Giraldo RB, Santos AM, Bello-Gualteros JM, Rueda JC, Saldarriaga EL, et al. Correlation between rapid-3, DAS28, CDAI and SDAI as a Measure of Disease Activity in a Cohort of Colombian Patients with Rheumatoid Arthritis. Clin Rheumatol [serial online]. 2016;36(5). DOI: 10.1007/s10067-016-3521-5
16 Canhao H, Rodrigues AM, Gregorio MJ, Dias SS, Gomes JAM, Santos MJ, et al. Common Evaluations of Disease Activity in Rheumatoid Arthritis Reach Discordant Classifications across Different Populations. Front med [serial online]. 2018; 5:40. DOI: 10.3389/fmed.2018.00040

- *Simplified Disease Activity Index (SDAI):* This includes the sum of tender and swollen joint counts [28 joints] and patient and physician global assessments and CRP.
- *Clinical Disease Activity Index (CDAI):* The sum of tender and swollen joint counts [28 joints] and patient and physician global assessments. This helps to generate specific cut-off values that are used to classify RA as in remission or in a low, moderate, or high activity state.
- *Routine Assessment of Patient Index Data 3 (RAPID3):* It is a measure of physical function, pain and global status, and is used mostly by US rheumatologists in clinical practice.
- *American College of Rheumatology (ACR) criteria for percentage improvement in involved joint count (e.g., ACR 20, ACR 50, and ACR 70).*

RED FLAGS[17]

- Cardiovascular disease (especially hypertension, atrial fibrillation, sinus tachycardia with right bundle branch block, infective endocarditis or myocardial infarction)
- Lung disease (interstitial lung disease, asthma, pulmonary fibrosis and infection, e.g., tuberculosis)
- Gastrointestinal disease (e.g., cholelithiasis, gastritis, peptic ulcer disease, diverticular disease, and hemorrhoidal disease)
- Osteoporosis or osteopenia (reduced bone mineral density)
- Malignancies.

DIFFERENTIAL DIAGNOSIS [1,2,18]

S. No.	Disease condition	Differentiating features
1.	*Systemic Lupus Erythematosus*	• Arthralgia, often associated with early morning stiffness • A butterfly-shaped facial (malar)rash • Photosensitivity • Oral ulcers
2.	*Chronic Lyme disease*	• Joint and muscle pain • Fever and headache, night sweats • Irregular red rash • Sensitivity to light
3.	*Osteoarthritis*	• Insidious onset over months or years, begins later in life, i.e., over the age of 45 years, but more often over 60 years • Commonly affects large weight bearing joints such as hip and knee joints • Joint pain is mainly related to movement and relieved by rest
4.	*Septic arthritis*	• Fever in the range of 101-102° F and sometimes higher • Acute or subacute monoarthritis, especially affecting knee and hip joints • Joint usually swollen, hot and red, with pain at rest and on movement • Decreased range of motion

17 Kłodziński Ł, Wisłowska M. Comorbidities in rheumatic arthritis. Reumatologia. 2018; 56(4): 228–233.
18 Chauhan K, Jandu JS, Goyal A, et al. Rheumatoid Arthritis. StatPearls. [Internet]. Treasure Island (FL): StatPearls Publishing; 2021. Available from: https://www.ncbi.nlm.nih.gov/books/NBK441999/

S. No.	Disease condition	Differentiating features
5.	*Psoriatic arthritis*	• Inflammatory arthritis that characteristically occurs in individuals with psoriasis • Inflammation of DIP (distal interphalangeal joint) • Asymmetric oligoarthritis and symmetric polyarthritis • Nail changes in the fingers or toes
6.	*Sjogren syndrome*	• Joint pain, swelling and stiffness with onset between 40-50 years • Dry mouth, dry eyes; sandy or gritty feeling under the eyelids • Fatigue
7.	*Sarcoidosis*	• Arthralgia • Erythema nodosum • Photophobia, blurred vision, dry eyes and increased lachrymation
8.	*Fibromyalgia*	• Fibromyalgia usually causes pain, stiffness, and tenderness in muscles and connective tissues throughout the body • A person feels pain when the doctor applies pressure to the 18–24 tender points associated with the condition • Symptoms impact all four quadrants of the body • Symptoms have lasted for at least 3 months without a break
9.	*Viral arthritis*	• Very acute, self-limiting pain and other symptoms associated with the particular virus involved

COMPLICATIONS[1,2,18]

- Infections
- Chronic anemia
- Gastrointestinal cancers
- Pleural effusions
- Osteoporosis
- Heart disease
- Sicca syndrome
- Felty syndrome
- Lymphoma.

MANAGEMENT

General management[1,2,4,20,21]

The main goal is to control inflammation, relieve pain and reduce disability associated with rheumatoid arthritis. Management of the patient with rheumatoid arthritis can be divided into two parts:

Non-pharmacological treatment[19,20]

1. Patient education: Educating patient about the disease condition and methods for managing the condition via healthy lifestyle behaviors.

19 Cunningham NR, Zuck SK. Nonpharmacologic Treatment of Pain in Rheumatic Diseases and Other Musculoskeletal Pain Conditions. Curr Rheumatol Rep. 2013; 15(2): 306.
20 King M. Management of Edema. J Clin Aesthet Dermatol. 2017;10(1):E1-4.

2. Rest
3. Exercise: Exercises can improve and maintain range of motion of the joints.
4. Physiotherapy: This consists of:

   (i) Use of splints and braces for correction of joint deformities and to provide joint support

   (ii) Joint mobilization exercises to maintain joint to maintain joint functions

   (iii) Muscle building exercises to gain strength.

5. Occupational therapy: Role of occupational therapy is to help the patient cope with his occupational requirements in the most comfortable way, by modifying them.
6. Nutrition and dietary therapy: Weight loss may be recommended for overweight and obese people to reduce stress on inflamed joints. Obesity is a risk factor for more rapid progression of joint damage. This should be explained to obese patients and strategies must be offered on how to lose and maintain an appropriate weight.

Homoeopathic management

Research studies indicate that homoeopathic medicines may play a considerable role in reducing the symptoms of joint inflammation, frequency, duration and severity of the attacks in rheumatoid arthritis and delay the onset of complications.[21,22,23]

Homoeopathic constitutional similimum improves the quality of life of patients with RA by reducing intensity of pain, limiting disability and reducing disease activity.[24] Thus the general improvement of the patients limits the need of analgesics and DMARDs in RA. There are many medicines available in the homoeopathic literature which can be selected based on presenting totality of each case for the treatment of RA.

In Synthesis repertory[25], 302 medicines are found in chapter EXTREMITIES under the rubric 'Pain-rheumatic'. The frequently verified characteristic features of some organospecific remedies are: ***Actea spicata***: Rheumatic pains in small joints, wrist, fingers, ankles, toes. Swelling of joints from slight fatigue. Wrist swollen, red, worse by motion. ***Calcarea fluorica:*** Chronic synovitis of knee joint. Worse during rest, change of weather, better warm application. ***Caulophyllum***: Special affinity for the smaller joints, severe drawing, erratic pain and stiffness in small joints, fingers, toes, ankles etc. ***Guaiacum officinale*****:** Rheumatic pain in shoulders, arms and hands; immovable stiffness. Worse in heat, cold weather. ***Stellaria medica***: Rheumatism, darting, shifting pains in all parts; stiffness of joints; parts sore to touch; worse by motion. ***Formica rufa***: Rheumatic pains, stiff and contracted

21 Gibson RG, Gibson S, MacNeill AD, Buchanan WW. Homoeopathic therapy in rheumatoid arthritis: evaluation by double blind clinical therapeutical trial. Br J Clin Pharmacol. 1980;9(5):453–9.
22 Andrade LE, Ferraz MB, Atra E, Castro A, Silva MS. A randomized controlled trial to evaluate the effectiveness of homeopathy in rheumatoid arthritis. Scand J Rheumatol. 1991;20(3):204–8.
23 Gibson RG, Gibson SL, MacNeill AD, Gray GH, Dick WC, Buchanan WW. Salicylates and homoeopathy in rheumatoid arthritis: preliminary observations. Br J Clin. Pharmacol. 1978; 6(5): 391-395.
24 Rao P, Nagalakshmi PM. Immunological studies on Rheumatoid Arthritis treated with Homeopathic drugs: Results of the Pilot Study. Indian Journal of Research in Homoeopathy. 2008;2(4):42-49.
25 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002.

joints, pains worse by motion and better by pressure. ***Lithium carbonicum***: Rheumatism of small joints. Chronic rheumatism connected with heart lesions. Rheumatic nodes. Better by hot water.

The commonly prescribed constitutional homoeopathic medicines are as follows:[26,27,28]

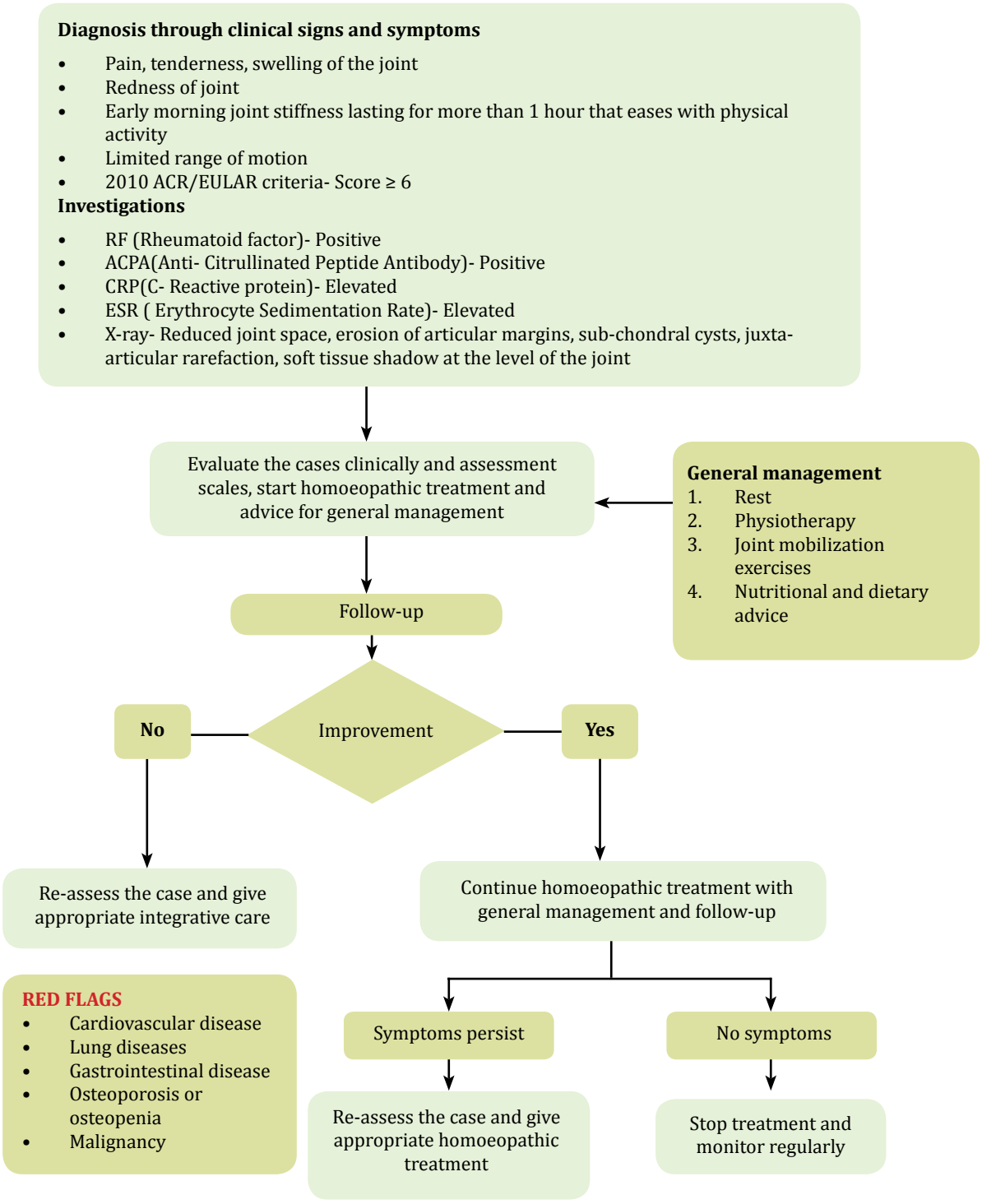
Medicines	General indications	Characteristic particulars
Rhus toxicodendron	*Chilly patient; sore, body bruised and stiff; restless, can't rest in any position; red triangular tip of tongue; worse in damp, cold, rainy weather, during rest and sleep, better by continued motion; increased thirst; great apprehension at night, sad, anxious; weeping without knowing why*	• Hot, painful swelling of joints • Tearing pains in tendons, ligaments, and fasciae • Tenderness about knee joint • Bruised or sprained pain in joints • Cracking of joints when moved • Worse during rest, in cold, wet, rainy weather • Better by motion, warmth
Ruta graveolens	*It acts upon the periosteum and cartilages. Complaints from straining flexor tendons especially. Tendency to the formation of deposits in the periosteum, tendons, and about joints, especially wrist. Feeling of intense lassitude, weakness and despair*	• Pain and stiffness in wrists and hands on lifting a weight • Wrenching pain in the shoulder joint, esp. when permitting arms to hang down or when resting on them • Pain in bones of feet and ankles • Worse in cold, wet weather • Better by motion
Bryonia alba	*Hot patient; dry; excessively thirsty, tendency to constipation, all symptoms worse from least motion; and relief from absolute rest; tongue dry parched, cracked, thickly white coated; nervous, desires to be in one position quietly, not to be carried; desires open air*	• Rheumatism of joints, with pale swelling, great pain, worse on touch or least motion • Knees stiff and painful • Hot swelling of feet • Joints red, swollen, hot, with stitching and tearing sensation • Worse from least motion • Better by absolute rest
Arnica montana	*Indifference; inability to perform continuous active work. Wants to be let alone; sore, lame, bruised feeling all through the body, as if beaten. Everything on which he lies seems too hard*	• Rheumatism, with great fear of being touched or approached • Rheumatism begins in lower limbs and ascends • Pale swelling in the knee • Inflammatory erysipelatous swelling of the feet with pain • Pain in back and limbs, as if bruised or beaten • Worse by movement, rest, least touch • Better during lying down

26 Clarke JH. A Dictionary of Practical Materia Medica, large edition, New Delhi: B Jain Publishers Pvt Ltd;2005
27 Boericke W. Pocket Manual of Homoeopathic Materia Medica & Repertory, 9th ed. New Delhi: B Jain Publishers (P) Ltd.: 2008
28 Allen HC. Allens Keynotes rearranged and classified with leading remedies of the Materia Medica and bowel nosodes, 9th ed. New Delhi: B Jain Publishers Pvt Ltd;2017.

Medicines	General indications	Characteristic particulars
Ledum palustre	*The Ledum rheumatism begins in feet and travels upward. Complaints of people who are cold all the time; there is a general lack of animal or vital heat; parts are cold to touch, but not cold subjectively to patient and yet heat of bed is intolerable*	• Aching pains in joints of shoulder and elbow, ankles • Joints swollen, hot, pale • Cracking in joints • Joints become the seat of nodosities which are painful • Rheumatism begins in lower limbs and ascends • Worse at night, heat of bed, on movement • Better by uncovering, cold water
Colchicum autumnale	*Colchicum is best known as a remedy in gout and rheumatism. It affects markedly the muscular tissues, periosteum, and synovial membranes of the joints. There is always great prostration, internal coldness, and tendency to collapse. Bad effects from suppressed sweat. The smell of food causes nausea even to fainting, especially fish*	• Joints stiff and feverish; shifting rheumatism • Parts are red, hot, swollen, with tearing pains • Inflammation of great toe, gout in heel, cannot bear to have it touched or moved • Knees strike together, can hardly walk • Hot oedematous swelling and coldness of the legs and feet, with acute pain during movement • Worse in the evening and at night • Better by stooping
Pulsatilla nigricans	*Hot patient; marked changeability of symptoms; aversion to fatty foods, warm foods and drinks, dislikes butter; thirstless with great dryness of mouth; tongue coated yellow or whitish; worse towards evening and in warm room, better in open air, by slow, gentle motion and cold applications; desire for company, mild, gentle, affectionate, yielding, weeping disposition*	• Sharp, jerking, and drawing pains in shoulder joint as well as in the arms, hands and fingers • Sensation of tension and swelling and wrenching pain in joints of elbows, hands and fingers, with rigidity • Pain in limbs, shifting rapidly; tensive pain, letting up with a snap • Knees swollen, with tearing, drawing pains • Feet red, inflamed, swollen. Legs feel heavy and weary • Worse on beginning to move, lying on left side, from letting the affected limb hang down • Better in the open air, cold applications.
Medorrhinum	*Weak memory. Time passes too slowly; cannot speak without weeping; loses the thread of conversation. State of collapse and trembling all over; wants to be fanned all the time. Intense restless and fidgety legs and feet. Very thirsty. Craving for liquor, salt, sweets, warm drinks*	• Legs heavy, ache all night, cannot keep still • Burning of hands and feet • Finger joints enlarged, puffy • Restless, better clutching hands • Painful stiffness of every joint in the body • Deformity of finger joints, large puffy knuckles, swelling and painful stiffness of ankles • Worse when thinking of it, from least movement, from daylight to sunset • Better at the seashore, lying on stomach, in damp weather

Medicines	General indications	Characteristic particulars
Natrum muraticum	*Hot patient; poorly nourished, great emaciation (marked on neck); losing flesh while living well; craving for salt; aversion to bread and fatty things; constipated; increased thirst; mapped tongue with red insular patches; melancholic, sad, plays alone, irritable, cross, cries when spoken to; awkward, hasty, drops things from nervous weakness; disposition to weep without cause, consolation aggravates*	• Wrenching pain in joints of shoulders, fingers, knee and foot • Difficulty in bending the joints of the fingers • Swelling of feet • Cracking in joints on motion • Worse at 10 am or 11 am, at the seashore, from heat of sun • Better in open air
Causticum	*Chilly patient; sad, hopeless. Intensely sympathetic; skin is dirty white sallow, with warts; especially on the face. Burning, rawness, and soreness are characteristic; stress incontinence; worse from dry, cold winds, clear, fine weather; Better in damp, wet weather, warmth*	• Rheumatic tearing in limbs • Burning in joints • Cracking and tension in knees, stiffness in hollow of knee • Dull, tearing pain in hands and arms • Heaviness and weakness • Tearing sensation in joints • Worse from dry, cold winds • Better by warmth, especially heat of bed
Rhododendron	*Rheumatic and gouty symptoms are well marked. Rheumatism in hot season. The modality (worse before a storm) is a true guiding symptom. The patient is particularly afraid of thunder*	• Acute inflammatory swelling of joints, wandering from one joint to another • Rheumatic tearing in all limbs, especially right side • Stiffness of neck • Pain in shoulders, arms, wrists • Worse at rest, in stormy weather, night • Better after the storm breaks, warmth
Calcarea carbonica	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets; aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated*	• Rheumatoid pains, after exposure to wet. Sharp sticking, as if parts were wrenched or sprained • Arthritic nodosities, swelling of the wrist, and of the joints of fingers • Drawing, shooting, and acute pains in the knees, especially when standing or sitting, also when walking • Swelling of knee. Sour foot sweat. Burning of soles of feet • Worse from exertion, ascending, in cold, wet weather • Better in dry weather, lying on painful side
Lycopodium clavatum	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4pm- 8pm; right sided complaints or symptoms shifts from right to left; desire for warm foods and drinks, sweet; dominating, cranky, lack of self-confidence, precocious*	• Pain in joints associated with digestive troubles • Pain in both knee joints; ankle swollen and tender to touch • Swelling and stiffness of joints • Arthritic stiffness of the elbow and wrist • Red swelling and arthritic tearing in joints of fingers; arthritic nodosities • Worse during rest, in sitting posture • Better by motion

ALGORITHM OF TREATMENT PROCESS FOR RHEUMATOID ARTHRITIS


Diagnosis through clinical signs and symptoms
Pain, tenderness, swelling of the joint
Redness of joint
Early morning joint stiffness lasting for more than 1 hour that eases with physical activity
Limited range of motion
2010 ACR/EULAR criteria- Score ≥ 6
Investigations
RF (Rheumatoid factor)- Positive
ACPA(Anti- Citrullinated Peptide Antibody)- Positive
CRP(C- Reactive protein)- Elevated
ESR (Erythrocyte Sedimentation Rate)- Elevated
X-ray- Reduced joint space, erosion of articular margins, sub-chondral cysts, juxta-articular rarefaction, soft tissue shadow at the level of the joint
Evaluate the cases clinically and assessment scales, start homoeopathic treatment and advice for general management
General management
1. Rest
2. Physiotherapy
3. Joint mobilization exercises
4. Nutritional and dietary advice
Follow-up
Improvement
No
Yes
Re-assess the case and give appropriate integrative care
Continue homoeopathic treatment with general management and follow-up
RED FLAGS
Cardiovascular disease
Lung diseases
Gastrointestinal disease
Osteoporosis or osteopenia
Malignancy
Symptoms persist
No symptoms
Re-assess the case and give appropriate homoeopathic treatment
Stop treatment and monitor regularly

CHAPTER 15

SCABIES

SCABIES

CASE DEFINITION[1]

Scabies is a parasitic infestation of the skin caused by the mite *Sarcoptes scabiei var. hominis*. In developed countries, scabies outbreaks are common in residential and nursing care homes where they cause significant morbidity and distress.

INCIDENCE/PREVALENCE[2,3,4,5,6,7,8]

- The burden of scabies is greater in resource-poor tropical regions, especially in children (5-10 %), adolescents, and elderly people.
- Scabies has been recognised as a "neglected tropical disease" (NTD) by the World Health Organisation.
- Worldwide, scabies is responsible for 0.07% of the total burden of diseases. Prevalence estimates in the recent scabies-related literature range from 0.2% to 71%.
- It causes significant global morbidity, with an estimated 300 million cases annually.
- In India, the incidence of scabies ranges from 13% to 59% in rural and urban areas.

AETIOLOGY & PATHOGENESIS

- Scabies mites burrow into the top layer of the epidermis where the adult female lays eggs. The eggs hatch in 3-4 days and develop into adult mites in 1-2 weeks. After 4–6 weeks, the patient develops an allergic reaction to the presence of mite proteins and faeces in the scabies burrow, causing intense itching and rashes. Most individuals are infected with 10-15 mites.[2]
- Transmission: The microscopic scabies mites are almost always transmitted by direct prolonged skin-to-skin contact with a person who is already infested. An infected person can spread scabies even if he or she has no symptoms. Humans are the source of infestation; animals do not spread human scabies.[9]
- It is an intensely itchy dermatosis caused by the mite *Sarcoptes scabiei*. Scabies presents within two to six weeks of initial infestation, but reinfestation can provoke symptoms within 48 hours.[10]

1 Chandler DJ, Fuller LC. A Review of Scabies: An Infestation More than Skin Deep. Dermatology. 2019;235(2):79-90.
2 World Health Organization. Neglected Tropical Disease: Scabies and other ectoparasites [Internet].2012 [Cited on 2020 September 14) Available from: https://www.who.int/neglected_diseases/diseases/scabies-and-other-ectoparasites/en/
3 World Health Organization. Epidemiology and management of common skin diseases in children in developing countries [Internet]. 2005 [Cited on 2021 March 04]. Available from: https://apps.who.int/iris/handle/10665/69229
4 Engelman D, Kiang K, Chosidow O, McCarthy J, Fuller C, Lammie P, et al. Toward the Global Control of Human Scabies: Introducing the International Alliance for the Control of Scabies. PLoSNegl Trop Dis. 2013; 7(8): e2167.
5 Banerji A. Scabies. Paediatr Child Health. 2015;20(7):395-398.
6 Karimkhani C, Dellavalle RP, Coffeng LE, Flohr C, Hay RJ, Langan SM, et al. Global skin disease morbidity and mortality: An update from the Global Burden of Disease Study 2013. JAMA Dermatology. 2017;153(5):406–12.
7 Karimkhani C, Colombara DV, Drucker AM, Norton SA, Hay R, Engelman D, et al. The global burden of scabies: a cross-sectional analysis from the Global Burden of Disease Study 2015. Lancet Infect Dis. 2017;17(12):1247-1254.
8 Nair PA, Vora RV, Jivani NB, Gandhi SS. A Study of Clinical Profile and Quality of Life in Patients with Scabies at a Rural Tertiary Care Centre. J ClinDiagn Res. 2016;10(10): WC01-WC05.
9 Centers for Disease Control and Prevention guideline. Scabies [Internet]. 2010 [Cited on 2020 August 14] Available from: https://www.cdc.gov/parasites/scabies/gen_info/index.html
10 Johnston G, Sladden M. Scabies: diagnosis and treatment. BMJ. 2005;331(7517):619-622.

- Scabies affects all age groups and both sexes, but the most vulnerable age groups are young children and the elderly in resource-poor communities who are especially susceptible to scabies as well as to the secondary complications of infestation (Figure 1).[11,12]

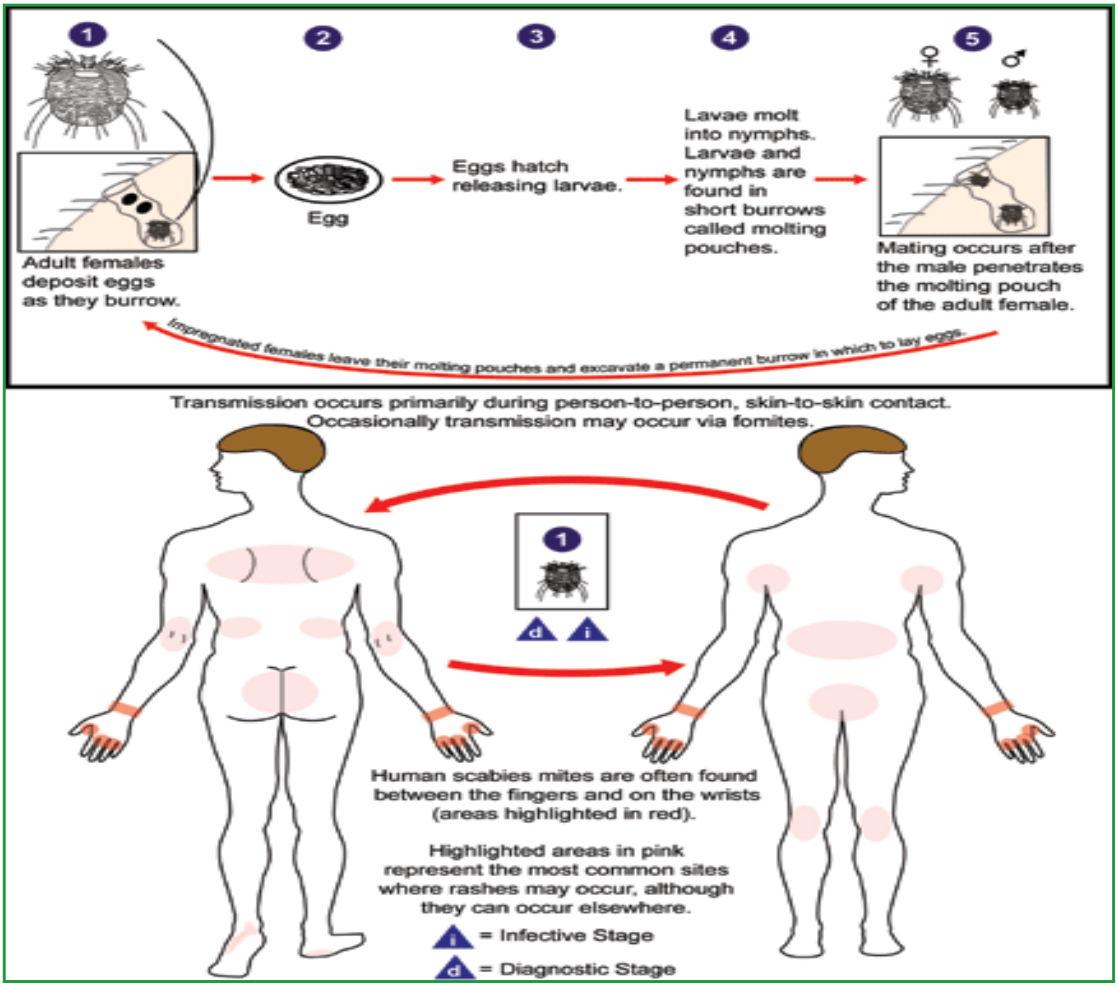

1
2
3
4
5
Adult females deposit eggs as they burrow.
Egg
Eggs hatch releasing larvae.
Lavae molt into nymphs. Larvae and nymphs are found in short burrows called molting pouches.
Mating occurs after the male penetrates the molting pouch of the adult female.
Impregnated females leave their molting pouches and excavate a permanent burrow in which to lay eggs.
Transmission occurs primarily during person-to-person, skin-to-skin contact.
Occasionally transmission may occur via fomites.
Human scabies mites are often found between the fingers and on the wrists (areas highlighted in red).
Highlighted areas in pink represent the most common sites where rashes may occur, although they can occur elsewhere.
= Infective Stage
= Diagnostic Stage

Figure 1: Life cycle image of mite Sarcoptes scabiei var. hominis. Courtesy: Scabies: Centers for Disease Control and Prevention guideline:2010.

RISK FACTORS[11,13,14,15]

- Scabies is transmitted by close personal contacts. Infants and children are therefore particularly liable to infection from close physical contact with other children and adults at home and at school.

11 World Health Organization. Scabies epidemiology [Internet]. 2017 [Cited on 2020 September 18]. Available from: http://www.who.int/lymphatic_filariasis/epidemiology/scabies/en/
12 Chosidow O. Clinical practice. Scabies. The New England Journal of Medicine. 2006;354(16):1718–172.
13 FDRE MOH. Scabies Outbreak Preparedness and Response Plan [Internet]. 2015 [Cited on 2020 September 14]. Available from: https://www.humanitarianresponse.info/sites/www.humanitarianresponse.info/files/documents/files/fmoh_scabies_response_plan-_29_dec_2015.docx_.pdf
14 Raza, N, Qadir, SNR, Agha H. Risk factors for scabies among male soldiers in Pakistan: case-control study. EMHJ. 2009;15(5):1105-1110.
15 Sara J, Haji Y, Gebretsadik A. Scabies Outbreak Investigation and Risk Factors in East Badewacho District, Southern Ethiopia: Unmatched Case Control Study. Dermatology Research and Practice [Internet]. 2018 [Cited on 2021 March 9]. Available from: https://doi.org/10.1155/2018/7276938

- It is reported that overcrowded living conditions, sleeping together, sharing of clothes, sharing of towels, poor hygiene practices, malnutrition, and travel to scabies outbreak areas are common risk factors for scabies.
- Outbreaks can occur among elderly people in nursing homes and can be transmitted to nursing staff. Transmission between adults is often by sexual contact.

DIAGNOSIS [1,2,9,10,12,16,17,18,19]

- Asymptomatic for the first 4 weeks.
- Pruritus is the hallmark of scabies regardless of age which develops 6-8 weeks after the exposure.
- Severe itching (pruritus), especially at night, is the earliest and most common symptom of scabies.
- A pimple-like (papular) itchy (pruritic) "scabies rash" is also common.
- The most common presenting lesions are papules, vesicles, pustules, and nodules.
- The pathognomonic sign is the burrow; a short, wavy, scaly, grey line on the skin surface. These burrows appear as tiny raised and crooked (serpiginous) greyish-white or skin-colored lines on the skin surface.
- History of itching in several family members over the same period is almost pathognomonic.
- Immunosuppressed individuals may develop an uncommon manifestation called crusted (Norwegian) scabies. The mites in crusted scabies are not more virulent but are more numerous (up to 2 million per patient).
- Individuals with crusted scabies present with thick, exfoliating crusts that may be more widespread, including the face.
- Itching and rash may affect much of the body or be limited to common sites such as between the fingers, wrist, axilla, elbow, groins, penis, nipple, waist, buttock, shoulder blades; in infants and young children, the palms, soles and head (face, neck and scalp) are more commonly involved.
- Infants and small children may have a more widespread rash, including involvement of the palms, soles of the feet, ankles, and sometimes the scalp. Inflammatory scabies nodules may be seen, particularly on the penis and scrotum of adult males and around the breasts of females.

16 Khanna N. Illustrated synopsis of dermatology and sexually transmitted diseases. 4th edition; India: Reed Elsevier India pvt limited; 2011:p.288.
17 Burkhart CN, Burkhart CG. Scabies, other mites, and pediculosis. In: Wolff K, Goldsmith L, Katz S, Gilchrest B, Paller AS & Leffell D, editors. Fitzpatrick's Dermatology in General Medicine, 8th Edition. New York: McGraw-Hill; 2011:p.2570.
18 Walton SF, Currie BJ. Problems in Diagnosing Scabies, a Global Disease in Human and Animal Populations.Clinical Microbiology Reviews. 2007;20(2):268-279.
19 Leung V, Miller M. Detection of scabies: A systematic review of diagnostic methods. Can J Infect Dis Med Microbiol. 2011;22(4):143-146.

A	Confirmed scabies	At least one of:
	A1	Mites, eggs or faeces on light microscopy of skin samples
	A2	Mites, eggs or faeces visualised on individual using high-powered imaging device
	A3	Mite visualised on individual using dermoscopy
B	Clinical scabies	At least one of:
	B1	Scabies burrows
	B2	Typical lesions affecting male genitalia
	B3	Typical lesions in a typical distribution and two history features
C	Suspected scabies	One of:
	C1	Typical lesions in a typical distribution and one history feature
	C2	Atypical lesions or atypical distribution and two history features
		History features:
	H1	Itch
	H2	Close contact with an individual who has itch or typical lesions in a typical distribution

2018 IACS criteria for the diagnosis of scabies[20]

COMPLICATIONS

Scabies has a number of important sequelae such as: [1,2,4,9]

Post-scabetic pruritus, secondary bacterial infection (esp. Streptococcus pyogenes) due to disruption of skin barrier, nodular scabies or pseudo-lymphoma, acute post-streptococcal glomerulonephritis, rheumatic heart disease, acute renal damage, impetigo and septicaemia.

INVESTIGATIONS[15]

- **Skin scrapings** are central to diagnosis and involve the application of one or two drops of mineral oil to a suspected lesion, which is then scraped or shaved with a scalpel or a microscope slide. The specimens are examined directly under a low-power light microscope. A small number of mites on an infected individual can often negate or delay a diagnosis.
- **'Burrow Ink Test' (BIT)** in which fountain pen ink is gently rubbed on a suspicious site. Excess ink is wiped off with an alcohol swab, making the burrow visible as a wavy ink-filled line in the stratum corneum where the mite has tunnelled.
- **Epiluminescence microscopy** using a dermatoscope, is the technique which relies on identifying a triangular structure, which corresponds to the anterior section of the mite including the mouth part and the two pairs of front legs.

DIFFERENTIAL DIAGNOSIS [21,22]

- **Classic scabies:** Impetigo, furunculosis, eczema, bites (mosquitoes, midges, fleas, lice, bedbugs, chiggers, other mites), tinea corporis, paronychia, papular urticarial and other allergic reactions,

20 Monsel G, Delaunay P, Chosidow O. Arthropods. In: Griffiths C, Barker J, Bleiker T, Chalmers R, Creamer D, editors. Rook's textbook of dermatology. 9th ed. Hoboken: Wiley & Sons;2016: p.201.

21 Currier R, Walton S, Currie B. Scabies in animals and humans: history, evolutionary perspectives, and modern clinical management. Annals of the New York Academy of Sciences. 2011; 1230:E50-60.

22 Hardy M, Engelman D, Steer A. Scabies- A clinical Update. Focus. The Royal Australian College of General Practitioners. 2017; AFP 46 (5):264-268.

dermatitis herpetiformis, eczema herpeticum, bullous pemphigoid, pityriasis rosea, contact dermatitis, viral exanthem & folliculitis.

- **Crusted scabies:** Psoriasis, skin malignancies (lymphoma, sezary syndrome), tinea corporis, nail tinea & syphilis.

RED FLAGS[16]

- Secondary skin infection
- Acute glomerulonephritis
- Eczematisation
- Crusting of skin.

EVALUATION AND ASSESSMENT[23,24,25,26,27,28]

- Severity grading scale for crusted scabies
- VAS (Visual Analogue Scale) for itching
- 5-D itch scale
- 12-Item Pruritus Severity Score (12-PSS)
- Dermatology Quality of Life Scales
- Family Dermatology Life Quality Index (FDLQI)
- Itchy Qol
- Dermatology Quality of Life Index.

PREVENTION [29,30]

- Early detection and implementation of infection control measures are keys in preventing further transmission.
- Avoid direct skin-to-skin contact with an infected person or with items such as clothing or bedding used by an infected person.
- All household members and other potentially exposed persons should be treated at the same time as the infested person, to prevent possible re-exposure and re-infestation.
- Treatment usually is recommended for members of the same household, particularly for those who have prolonged skin-to-skin contact.

23 Davis JS, McGloughlin S, Tong SY, Walton SF, Currie BJ. A novel clinical grading scale to guide the management of crusted scabies. PLoSNegl Trop Dis. 2013;7(9): e2387.
24 Elman S, Hynan LS, Gabriel V, Mayo MJ. The 5-D itch scale: a new measure of pruritus. Br J Dermatol. 2010;162(3):587-93.
25 Reich A, Bożek A, Janiszewska K, Szepietowski JC. 12-Item Pruritus Severity Scale: Development and Validation of New Itch Severity Questionnaire. Biomed Res Int [Internet].2017 [Cited on 9 March 2021]. Avilable from: https://www.hindawi.com/journals/bmri/2017/3896423/
26 Morgan M, McCreedy R, Simpson J, Hay RJ. Dermatology quality of life scales- a measure of the impact of skin diseases. Br J Dermatol. 1997;136(2):202-206.
27 Basra MK, Sue-Ho R, Finlay AY. The Family Dermatology Life Quality Index: measuring the secondary impact of skin disease. Br J Dermatol. 2007;156(3):528-538.
28 Pereira MP, Ständer S. Assessment of severity and burden of pruritus. Allergol Int. 2017;66(1):3-7.
29 Centre for disease control and prevention. Parasites: Prevention & control, CDC Scabies- Prevention and Control [Internet]. 2010 [Cited on: 2020 August 14]. Available from: https://www.cdc.gov/parasites/scabies/prevent.html
30 Ministry of Health, Malaysia. Guideline for Management of Scabies in Adults and Children [Internet]. 2015 [Cited on 2020 August 14] Available from: file:///C:/Users/USER/Downloads/Guideline%20For%20Management%20Of%20Scabies%20In%20Adults%20And%20Children.pdf

MANAGEMENT [1,21,23]

General management

- Patients with scabies and their close physical contacts, even without symptoms, should receive treatment at the same time. Prescriptions must be provided for all household members and sexual partners.
- Avoid wearing damp clothes as the mites can thrive and multiply if favorable conditions are provided.
- Bedding or clothing worn or used next to the skin anytime during the three days before treatment should be machine-washed using hot water at high temperature (>50°C) and dried or kept in a plastic bag for up to 72 hours, because mites that are separated from the human host will die within this time period.
- Mattresses should be thoroughly vacuumed, ironed or steam cleaned, paying particular attention to the seams.
- Where possible, amenities such as toilets and chairs should not be shared.
- To avoid scratching the skin hard as that can lead to the secondary skin infections.
- Patient and family members should use fresh, clean bedding and clothing to avoid recurrence.
- School children with scabies should be given leave from school and should be notified of the case. Parents of other children who may have been exposed to children with scabies should be notified by a letter from the school.

Homoeopathic management

The totality of various characteristic signs and symptoms exhibited by the patient leads to the similar remedy. The homoeopathic concept of health is 'holistic' and 'individualistic'.[31]

For this individualisation of the patient, the 'totality of symptoms' which is not merely the numerical aggregate of all the symptoms but includes the idea or plan which unites them in a special manner to give them its characteristic form.[32] The miasmatic background of each case must be taken into consideration while selecting the remedy. Hahnemann has considered psora responsible for the production of scales, crusts, and pruritus.[33]

Some medicines that can be specifically useful in treatment of scabies are: ***Anthrakokali***: Papular eruptions with a vesicular tendency, especially on the scrotum. ***Croton tiglium***: Intense itching but scratching is painful. Worse during summer, touch, at night and in the morning, washing. ***Rhus venenata***: Itching relieved by hot water. ***Selenium***: Dry scaly eruptions with itching. Itching around ankles and folds of skin, between fingers; in palms.

31 Hahnemann S. Organon of Medicine. 3rd Indian Reprint. Calcutta: Economic Homoeo Pharmacy; 2012.
32 Close S. The Genius of Homoeopathy. Reprint ed. New Delhi: B Jain Publ (P) Ltd; 1995.p.153-4,194.
33 Hahnemann S. The Chronic Diseases Their Peculiar nature and Their Homoeopathic cure.14th Impression, vol-I. New Delhi: B. Jain Publishers (P) Ltd;2014: p.39.

Indications of a few important constitutional drugs are given below:[34,35]

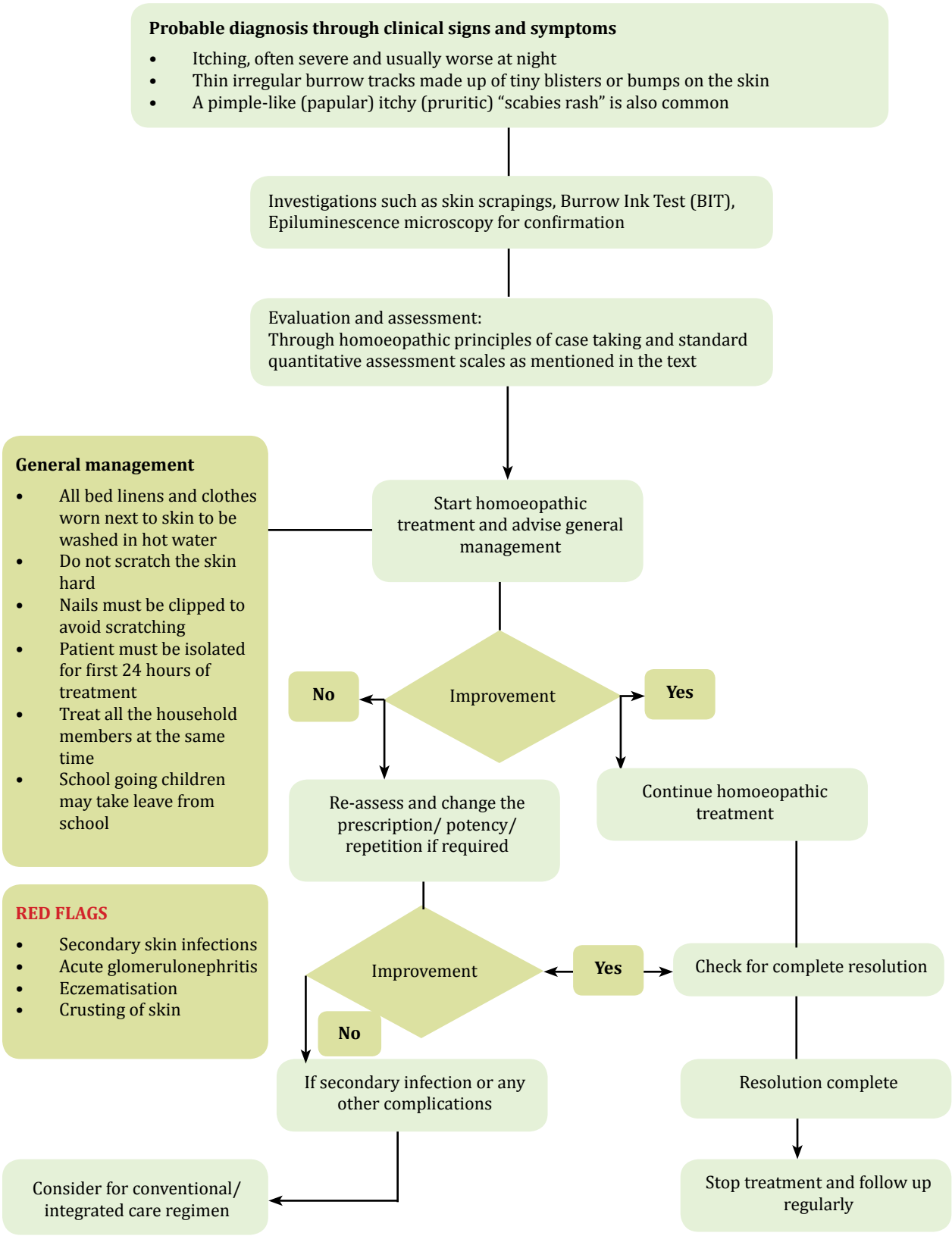
Medicines	General indications	Characteristic particulars
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sit stooping; red orifices; desires sweets, sugar, meat, when the best selected remedy fails to improve*	• Extreme itching when the scratching leads to bleeding • Itching may turn worse by washing, woolen clothing and application of heat • Skin unhealthy with offensive discharge from the lesions • Soreness in folds • Worse from heat of bed, bathing • Better in dry, warm weather
Psorinum	*Extremely chilly patient, wants to cover even in hottest summer weather; pale, delicate, sickly; scanty perspiration; offensive discharges; wakes up at night feeling hungry; anxious, fearful, child is good all day while restless and troublesome at night*	• Patients lack immunity, catch infections very quickly, and recover slowly • Blisters exude pus with extreme itching which is worse at night and warmth of bed • The skin complaints tend to return every winter • Scalp is dry, scaly or moist, suppurating eruptions • Skin inactive, dry & dirty look • Worse from changes of weather, cold • Better in heat, warm clothing, in summers
Sepia	*Chilly patient; tall, thin built with yellow saddle across upper part of cheeks and nose, big belly; dry flabby skin. Predisposed to take cold at change of weather. Desire for sour food which aggravates. Irregular menses. Cheerful, active when well but indifferent and quarrelsome when sick, self-absorbed, sad, weeping and indolent*	• Indicated in scabies where the lesions are yellowish brown and scaly • Most common affected areas are bends of the elbows and knees • Worse from washing • Better by exercise, warmth of bed
Causticum	*Dark-complexioned and rigid-fibered persons. Restlessness at night, with tearing pains in joints and bones, and faint-like sinking of strength. Emaciation due to disease, worry, etc, and of long standing. Intense sympathy for suffering of others. Burning, rawness, and soreness* are *characteristic. Worse: dry, in clear fine* weather. *Better, in damp, wet weather*	• Indicated when scabies affects the webs of fingers and folds of skin with itching and soreness • Worse from becoming cold, from getting wet or bathing

34 Allen HC. Keynotes and characteristics with comparisons of the leading remedies of the Materia Medica; 11th impression, New Delhi: B. Jain Publishers Pvt. Ltd; 2012.

35 Boericke W. Pocket manual of homoeopathic Materia Medica. Reprint ed. New Delhi B. Jain Publishers Pvt. ltd;1998.

Medicines	General indications	Characteristic particulars
Mezereum	*Skin symptoms, affections of bones, and neuralgias most important, especially about teeth and face. Bruised, weary feeling in joints, with drawing and stiffness. Pains of various kinds, with chilliness and sensitiveness to cold air. Bone pains. Eruptions after vaccination. Burning, darting sensation in the muscles; subsultus tendinum. Pains shoot upward and seem to draw patient up out of bed. Semi-lateral complaints. Patient is very sensitive to cold air*	• Lesions itch and burn forming thick scabs and exude pus discharge • Eczema; intolerable itching; chilliness with pruritus • Ulcers itch and burn, surrounded by vesicles and shining, fiery red areola • Worse in cold air, in bed at night • Better in open air
Graphites	*Chilly patient, takes cold easily; fatty; pale; tendency to skin affections and constipation; lumpy, thick, hard; history of delayed menstruation; skin and glands; dislikes sweets; cautious, indecisive and lazy*	• Lesions crack and ooze a clear or sticky yellowish discharge when scratched • Unhealthy skin and every little injury suppurate • Cracks or fissures in ends of fingers, nipples, of anus & between the toes • Worse from warmth, at night • Better in dark, from wrapping up
Mercurius solubilis	*Sensitive to changes of temperature. Profuse offensive perspiration. Tongue flabby with imprint of teeth. Increased salivation; Increased thirst for large quantity of water. Worse at night, in wet damp weather*	• Vesicular and pustular eruptions • Itching, worse from warmth of bed • Excessive odorous viscid perspiration • Worse at night, during perspiration, rainy weather, warm room
Hepar sulphuris	*Extremely chilly patient; hypersensitive (to cold, pain), Faints easily; scrawny; Glandular constitution; Profuse sweat; Irritable; difficult to please, slow to act*	• Unhealthy skin, every little injury suppurates • Great sensitiveness to slightest touch, burning, stinging, easily bleeding • Worse from dry cold winds • Better from warmth, damp weather, wrapping up head

ALGORITHM OF TREATMENT PROCESS FOR SCABIES


Probable diagnosis through clinical signs and symptoms
Itching, often severe and usually worse at night
Thin irregular burrow tracks made up of tiny blisters or bumps on the skin
A pimple-like (papular) itchy (pruritic) "scabies rash" is also common
Investigations such as skin scrapings, Burrow Ink Test (BIT), Epiluminescence microscopy for confirmation
Evaluation and assessment:
Through homoeopathic principles of case taking and standard quantitative assessment scales as mentioned in the text
General management
All bed linens and clothes worn next to skin to be washed in hot water
Do not scratch the skin hard
Nails must be clipped to avoid scratching
Patient must be isolated for first 24 hours of treatment
Treat all the household members at the same time
School going children may take leave from school
Start homoeopathic treatment and advise general management
Improvement
No
Yes
Re-assess and change the prescription/ potency/ repetition if required
Continue homoeopathic treatment
RED FLAGS
Secondary skin infections
Acute glomerulonephritis
Eczematisation
Crusting of skin
Improvement
Yes
Check for complete resolution
No
If secondary infection or any other complications
Resolution complete
Consider for conventional/ integrated care regimen
Stop treatment and follow up regularly

CHAPTER 16

SCIATICA SYNDROME

SCIATICA SYNDROME

CASE DEFINITION[1,2]

Sciatica Syndrome is a set of symptoms including pain caused by general compression or irritation of one of five spinal nerve roots of each sciatic nerve or by compression or irritation of the left or right or both sciatic nerves. Sciatica is a set of symptoms rather than a diagnosis for what is irritating the root of the nerve to cause the pain.

Synonyms of sciatica – Sciatic neuritis; Sciatic neuralgia; Lumbar radiculopathy.

INCIDENCE/PREVALENCE [2,3,4]

Exact data on the incidence and prevalence of sciatica are lacking. In general, an estimated 5%-10% of patients with low back pain have sciatica, whereas the reported lifetime prevalence of low back pain ranges from 49% to 70%. The annual prevalence of disc related sciatica in the general population is estimated at 2.2%.

Sciatica has some unique epidemiologic characteristics:

- No gender predominance.
- Occurs in fourth to fifth decade and then declines; rarely seen before the age of 20 years unless due to trauma.
- No association with body height has been established except in the age group 50 to 60 years.
- Genetic predisposition: more significant in monozygotic; individuals under 40 years.
- Physical activity increases incidence in those with prior sciatica symptoms.
- Occupational: subject to physically awkward positions or strenuous physical activity (e.g., machine operators, truck drivers).
- Smoking and mental stress can be other risk factors.

AETIOLOGY [2,3]

Any condition that may structurally impact or compress the sciatic nerve may cause sciatica symptoms. The most common cause of sciatica is a herniated or bulging lumbar intervertebral disc.

- Spondylolisthesis
- Lumbar or pelvic muscular spasm and/or inflammation
- Spinal or paraspinal mass including malignancy

1 National Guideline Centre (UK). Low Back Pain and Sciatica in Over 16s: Assessment and Management. London: National Institute for Health and Care Excellence (UK) [Internet]. 2016 [cited on 11 March 2021]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK401577/

2 Davis D, Arvind, Maini K, Vasudevan A. Sciatica. StatPearls Publishing [Internet]. 2020 [Cited on 8 March 2021]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK507908/

3 Stafford MA, Peng P, Hill DA. Sciatica: a review of history, epidemiology, pathogenesis, and the role of epidural steroid injection in management. British Journal of Anaesthesia. 2007;99(4):461-73.

4 Koes BW, van Tulder MW, Peul WC. Diagnosis and treatment of sciatica. BMJ. 2007; 334(7607): 1313–1317.

- Epidural hematoma, or epidural abscess
- Spinal disc herniation
- Spinal stenosis
- Piriformis syndrome
- Pregnancy.

PATHOPHYSIOLOGY [2,3]

- Sciatica is generally caused by the compression of lumbar nerves L4, or L5 or sacral nerves S1, S2, or S3, or by compression of the sciatic nerve itself. The sciatic nerve is made up of the L4 through S2 nerve roots. These nerve roots fuse to create the large sciatic nerve in the pelvic cavity. The sciatic nerve then exits the pelvis through the sciatic foramen posteriorly. After exiting the pelvis, the nerve courses inferior and anterior to the piriformis and posterior to gemellus superior, gemellus inferior, obturator internus, and quadratus femoris. Next, the sciatic nerve enters posterior thigh and courses through biceps femoris. Finally, the sciatic nerve terminates at the knee posteriorly in the popliteal fossa giving rise to the tibial and common fibular nerves. Sciatica symptoms occur when there is pathology anywhere along this course of the nerve.
- When sciatica is caused by compression of a dorsal nerve root (radix), it is considered a lumbar radiculopathy (or radiculitis when accompanied with an inflammatory response). This can occur as a result of a spinal disc bulge or spinal disc herniation (a herniated intervertebral disc), or from roughening, enlarging, or misalignment (spondylolisthesis) of the vertebrae, or as a result of degenerated discs that can reduce the diameter of the lateral foramen (natural hole) through which nerve roots exit the spine.
- The intervertebral discs consist of an annulus fibrosus, which forms a ring surrounding the inner nucleus pulposus. When there is a tear in the annulus fibrosus, the nucleus pulposus (pulp) may extrude through the tear and press against spinal nerves within the spinal cord, cauda equina, or exiting nerve roots, causing inflammation, numbness, or excruciating pain. Inflammation in the spinal canal can also spread to adjacent facet joints and cause lower back pain and/or referred pain in the posterior thigh(s).
- Pseudo-sciatic pain can also be caused by compression of peripheral sections of the nerve, usually from soft tissue tension in the piriformis or related muscles.

DIAGNOSIS [2, 4, 5]

Sciatica is typically diagnosed by physical examination, and the history of symptoms. Generally, if a person reports the typical radiating pain in one leg as well as one or more neurological indications of nerve root tension or neurological deficit, sciatica can be diagnosed.

Overall, if a patient reports the typical radiating pain in one leg combined with a positive result on one or more neurological tests indicating nerve root tension or neurological deficit, the diagnosis of sciatica seems justified.

5 Fauci AS, Kasper DL, Longo DL, Braunwald E, Hauser SL, Jameson JL, Loscalzo J, editors. Harrison's Principles of Internal Medicine. Sixteenth Edition, Volume I, Part Two. Cardinal Manifestations and Presentation of Diseases, Section 1, Chapter 15, Pain. United states: McGraw–Hill, Medical Publishing Division; 2005:95-96.

Clinical presentation[2,4,5]

- Unilateral leg pain greater than low back pain.
- Pain typically occurs in the distribution of a dermatome and goes below the knee to the foot. It may be associated with neurological dysfunction, such as weakness.
- Pain is characteristically of shooting type, quickly traveling along the course of sciatic nerve.
- Numbness and paraesthesia in the distribution of sciatic nerve.
- Straight leg raising test induces more leg pain.
- Localised neurology—that is, limited to one nerve root.

Physical examination[6]

- Patrick sign
- Straight leg raising (SLR) test
- Crossed SLR sign
- Reverse SLR sign.

INVESTIGATIONS[4, 5, 6]

Diagnostic imaging is only useful if the results influence further management. In acute sciatica the diagnosis is based on history taking and physical examination. Imaging may be indicated at this stage only if there are indications or "red flags" signs (mentioned below).

- Plain X-ray of the lumbar spine: helps to rule out fracture, spondylolisthesis, malignant infiltration of a vertebral body.
- Non-contrast CT scan, especially using spiral scanning techniques, can provide helpful images of the disc protrusion and/or narrowing of the exit foramina.
- MRI: investigation of choice if available, since soft tissues are well imaged.
- Electromyography: used to access the functional integrity of the peripheral nervous system.

COMPLICATIONS/RED FLAGS[4]

- Malignancies
- Osteoporotic fractures
- Radiculitis
- Cauda equina syndrome.

DIFFERENTIAL DIAGNOSIS[3]

The conditions simulating sciatica include:

- Herniated lumbosacral disc
- Muscle spasm
- Nerve root impingement

6 Boon NA, Colledge NR, Walker BR. Davidson's Principles & Practice of Medicine. 20th Edition. In: Neurological Disease, Philadelphia, USA: Churchill Livingstone Elsevier; 2006: p.1242.

- Epidural abscess
- Epidural hematoma
- Tumor
- Pott's Disease, also known as spinal tuberculosis
- Piriformis syndrome.

PREVENTION[2, 3, 4]

- Advise to stay active and continue daily activities; a few hours of bed rest may provide some symptomatic relief but does not result in faster recovery.
- Use of hot or cold packs for comfort and to decrease inflammation.
- Avoidance of inciting activities or prolonged sitting/standing.
- Practicing good, erect posture.
- Engaging in exercises to increase core strength.
- Gentle stretching of the lumbar spine and hamstrings.
- Regular light exercises such as walking, swimming, or aquatherapy.
- Use of proper lifting techniques.

EVALUATION AND ASSESSMENT

- Roland–Morris disability questionnaire[7]
- Modified Roland-Morris disability scale[8]
- Pain drawing assessment tool of sciatica[9]
- Outcome measure in lumbar spinal stenosis.[10]

PROGNOSIS[3]

Most cases of sciatica resolve in less than 4 to 6 weeks with no long-term complications even if no medical therapy is sought. In more severe cases or cases where the neurologic deficit is present, the patient may have a more prolonged course of recovery. However, recovery is still excellent. Some studies have shown that poor occupational mechanics, psychological depression, and poor socioeconomic situations lead to an increased chance of chronic, recurrent sciatica.

MANAGEMENT[2, 3, 5, 6]

General management

- Educating patients about the causes and expected prognosis.
- Some 90% of patients with sciatica recover with conservative treatment with analgesics and early mobilization.

7 Roland M, Morris R. A study of the natural history of low back pain: Part 1. Development of a reliable and sensitive measure of disability in low-back pain. Spine. 1983; 8:141-144.

8 Kim M, Guilfoyle MR, Seeley HM, Laing RJ. A modified Roland-Morris disability scale for the assessment of sciatica. Acta Neurochir (Wien). 2010;152(9):1549-53.

9 Tachibana T, Maruo K, Inoue S, Arizumi F, Kusuyama K, Yoshiya S. Use of pain drawing as an assessment tool of sciatica for patients with single level lumbar disc herniation. Springerplus. 2016;5(1):1312.

10 Stucki G, Daltroy L, Liang MH, Lipson SJ, Fossel AH, Katz JN. Measurement properties of a self-administered outcome measure in lumbar spinal stenosis. Spine.1996; 21:796-803.

- To do back strengthening exercises and avoid physical maneuvers (likely to strain the lumbar spine).
- Non-pharmacological management include acupuncture, spinal manipulation, traction therapy, physical therapy, behavioural treatment, multidisciplinary treatment.
- Deep tissue massage may be helpful in some cases.

Homoeopathic management[11,12,13]

Homoeopathy with its huge armamentarium of medicines and holistic approach can prove beneficial in such cases. The homoeopathic medicines have well defined side affinity, aggravating and ameliorating factors and can bring relief in the acute pain and paresthesis. In Synthesis repertory[14], medicines for sciatica syndrome 225 medicines are found in chapter EXTREMITIES under the rubric 'Pain-lower limb-sciatic nerve'. High ranking medicines for right-sided sciatica - *Dioscorea villosa, Lachesis mutus, Lycopodium clavatum, Phytolacca decandra, Tellurium.*

High ranking medicine for left-sided sciatica -*Ammonium muriaticum, Kali bichromicum*. The specific medicines verified clinically and suggestive for sciatica syndrome are: ***Arsenicum album***: Cold damp cellars aggravate or bring on complaints of Sciatica. Burning pains, relieved by heat. ***Gnaphalium polycephalum****:* Intense pain along the sciatic nerve with a feeling of numbness. ***Hypericum perforatum***: Lancinating pain in lower limbs (sciatica), neuritis with tingling, burning pain, numbness and flossy skin. ***Iris versicolor***: Sciatica, sudden shooting, causing lameness, feels as if was wrenched. Pain extending to popliteal space, better from violent motion. ***Lac vaccinum defloratum:*** Violent rectal and sciatic pains following every effort at defection. ***Lyssinum:*** Dull pain in left sciatic nerve, returning periodically. Worse sight or sound of running water or pouring water. ***Phytolacca decandra***: Sciatica, pain involves the right leg especially the outer side of the thigh, aggravation damp weather. Aching, soreness, restlessness, prostration, are general guiding symptoms. ***Sepia***: Sciatica with lancinating stitches, must get out of bed for relief. Pain worse from rising, better from slow walking. Sciatica, better during pregnancy. ***Tellurium metallicum***: Pain in sacrum, passing into right thigh down the sciatic nerve, worse when pressing at stool, coughing, laughing, also when lying on the affected side. ***Valeriana officinalis:*** Sciatica, pain aggravates when standing and letting foot rest on floor.

11 Allen HC. Keynotes and Characteristics with Comparisons of Some of The Leading Remedies of The Materia Medica with Bowel Nosodes. Eighth Edition. New Delhi: B. Jain Publishers (P) Ltd.; 2002.
12 Homeopathic Therapeutics for Sciatica. Hompath Software, last update on 18/12/2018, last seen on September 04, 2019.
13 Kent JT. Repertory of homoeopathic materia medica. Enriched Indian ed. New Delhi: B Jain Publishers (P) Ltd; 2007.
14 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002.

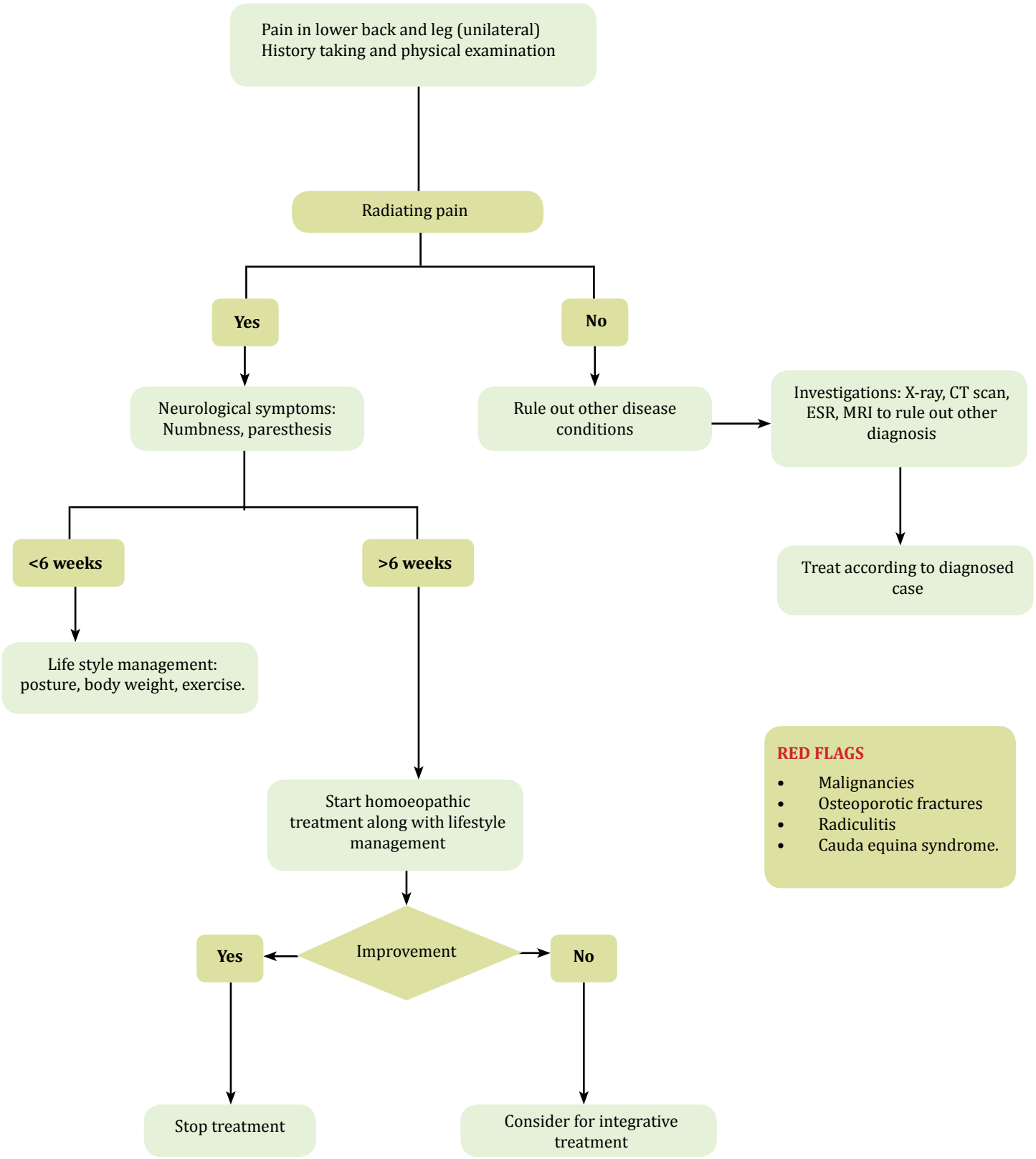
The medicines with indications for treatment of sciatica are mentioned below:[11,15]

Medicines	General indications	Characteristic particulars
Colocynthis	*Often indicated in the transition season when the air is cold, but the sun is still powerful enough to heat the blood. Extremely irritable, impatient; becomes angry or offended on being questioned. Develop most of its symptoms in the abdomen and head, causing intense neuralgias. Agonizing pain in abdomen causing patient to bend double, with restlessness, twisting and turning to obtain relief better by hard pressure*	• Crampy pain in hip, as though screwed in a vise; lies upon affected side • Shooting pain, like lightning-shocks, down the whole limb left hip, left thigh, left knee, into popliteal fossa • Worse by gentle touch • Better by pressure and heat
Lac caninum	*The keynote symptom is, erratic pains, alternating sides. Great weakness and prostration. Sore throat, diphtheria and rheumatism. Feels as if walking on air, or of not touching the bed when lying down*	• Sciatica- right sided • Backache: intense, unbearable, across supra-sacral region, extending to right natis and right sciatic nerve • Spine aches from base of brain to coccyx, very sensitive to touch or pressure • Worse by rest and on first moving
Lachesis mutus	*Hot patient; thin and emaciated; hemorrhagic diathesis; great sensitiveness to touch; hot flushes and perspiration; Desires oysters, alcohol, farinaceous food, all complaints worse after sleep; loquacious, jumps from one idea to another, jealous, suspicious, religious and indolent*	• Sciatica, right-sided, pain as from a hot iron • Worse after sleep • Better by appearance of discharge
Rhus toxicodendron	*Chilly patient; sore, body bruised and stiff; restless, can't rest in any position; red triangular tip of tongue; worse in damp, cold, rainy weather, during rest and sleep, better by continued motion; increased thirst; great apprehension at night, sad, anxious; weeping without knowing why*	• Muscular rheumatism, sciatica, left side • Numbness and formication, after overwork and exposure • Lameness, stiffness and pain on first moving after rest, or on getting up in the morning • Worse at night • Better by walking or continued motion

15 Boericke W. New manual of Homoeopathic Materia Medica with Repertory. Third Revised, Augmented Edition based on Ninth Edition. New Delhi: B. Jain Publishers(P) Ltd.; 2007.

Medicines	General indications	Characteristic particulars
Staphysagria	*Sickly; tired; sensitive subjects; Bottled up emotions. Always angry. Easily offended, apathetic indifferent. Nervous affections with marked irritability, diseases of the genito-urinary tract and skin. Worse from anger, indignation, grief, mortification, loss of fluids, onanism, sexual excesses, tobacco; least touch on affected parts. Better after breakfast, warmth, rest at night*	• Croupy cough in winter alternating with sciatica in summer • Backache worse at night in bed, and in the morning before rising
Lycopodium clavatum	*Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part semi- dropsical; complexion pale, dirty, sallow with deep furrows; looks old; recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; worse from 4- 8 pm; right sided complaints or symptoms shifts from right to left; desire for warm foods and drinks, sweet; dominating, cranky, fear of being alone, lack of self-confidence, precocious*	• Numbness, also drawing and tearing in limbs (sciatica), especially when at rest or at night • Pain in the heels on treading, as if from a pebble • Sciatica, worse right side • Worse from warm application • Better by motion

ALGORITHM OF TREATMENT PROCESS FOR SCIATICA SYNDROME



CHAPTER 17

SCHIZOPHRENIA

SCHIZOPHRENIA

CASE DEFINITION[1]

Schizophrenia is characterized by disordered cognition, including a "gain of-function" in psychotic symptoms and a "loss of-function" in specific cognitive functions, such as working and declarative memory, but without the progressive dementia that characterizes classical neuro-degenerative disorders.

INCIDENCE/PREVALENCE[2,3,4]

- In 2017, there were an estimated 1.1 million new cases and a total of 19.8 million cases of schizophrenia globally.
- About 0.3% to 0.7% of people are affected by schizophrenia during their lifetimes.
- It is equally prevalent in men and women. The onset is earlier in men than in women. The peak ages of onset are 10-25 years for men and 25-35 years for women. When the onset occurs after 45 years, the disorder is characterized as late-onset schizophrenia.

Burden[5]

- Despite its relatively low prevalence, it is associated with significant health, social, and economic concerns.
- Individuals with schizophrenia have an increased risk of premature mortality (death at a younger age than the general population).
- Co-occurring medical conditions, such as heart disease, liver disease, and diabetes mellitus, contribute to the higher premature mortality rate among individuals with schizophrenia. Possible reasons for this excess early mortality are increased rates of these medical conditions and under-detection and under-treatment of them.
- An estimated 4.9% of people with schizophrenia die by committing suicide, a rate that is far greater than the general population, with the highest risk in the early stages of illness.
- Approximately, half of individuals with schizophrenia have co-occurring mental and/or behavioral health disorders.
- Financial costs associated with schizophrenia are disproportionately high relative to other chronic mental and physical health conditions, reflecting both "direct" costs of health care as well as "indirect" costs of lost productivity, criminal justice involvement, social service needs, and other factors beyond health care.

1 Madhivanan S, Jayaraman K, Daniel SJ, Ramasamy J. Symptomatic Remission in Schizophrenia and its Relationship with Functional Outcome Measures in Indian Population. J Clin Diagn Res. 2017 Jan;11(1):VC05-VC07.

2 GBD 2017 Disease and Injury Incidence and Prevalence Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. The Lancet. 2018;392 (10159): 1789–1858.

3 Sadock BJ, Sadock VA, Ruiz P. Kaplan and Sadocks Synopsis of Psychiatry Behavioral Sciences /Clinical Psychiatry. Eleventh ed. New Delhi: Wolter Kluwer [India] Pvt Ltd; 2018.

4 Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2017 (GBD 2017) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME); 2018.

5 National Institute of Mental Health. Schizophrenia [Internet]. 2018 [Cited Feb 11,2020]. Available from: https://www.nimh.nih.gov/health/statistics/schizophrenia.shtml

AETIOLOGY AND RISK FACTORS[3,6,7,8,9]

- *Environmental factors:* Season of birth – late winters/ early spring/ summers have been linked to the incidence of schizophrenia. Children growing in an urban environment are more prone to schizophrenia. Other factors are: exposure to influenza epidemics, maternal starvation during pregnancy, Rhesus factor incompatibility, and excess of winter births.
- *Genetic and physiological:* There is a strong genetic contribution in determining risk for schizophrenia. The concordance rates of schizophrenia for monozygotic twins have been found to be about 40 to 50%, and heritability estimates are around 80%.
- *Birth and pregnancy complication hypotheses:* Infants born with a history of pregnancy or birth complications are at increased risk of developing schizophrenia as adults.
- First degree biological relatives of persons with schizophrenia have a ten times greater risk for developing the disease than the general population.
- *Biochemical factors*: Dopamine, Serotonine, Nor-epinephrine, GABA, Neuropeptides, Glutamate, Acetyl choline and Nicotine are impaired in schizophrenia.
- *Age:* The mean ages of onset for schizophrenia is below 45 years in men and women.
- *Marital status*: Reports have shown higher rates of schizophrenia for unmarried than for married patients.

TYPES OF SCHIZOPHRENIA[10]

- **Paranoid/ Paraphrenic type:** This is the commonest type of schizophrenia. The clinical picture is dominated by relatively stable, often paranoid, delusions, usually accompanied by hallucinations. Disturbances of affect, volition and speech, and catatonic symptoms, are not prominent.
- **Disorganized/ Hebephrenic type:** A form of schizophrenia in which affective changes are prominent, delusion and hallucinations fleeting and fragmentary, behavior irresponsible and unpredictable and mannerisms common. Shallow mood with often giggling or self-satisfied, self-absorbed smiling.
- **Catatonic type:** Prominent psychomotor disturbances are essential and dominant features and may alternate with extreme hyperkinesis and stupor or automatic obedience and negativism. Constrained attitude and postures may be maintained for long periods.
- **Undifferentiated/Atypical type:** Condition meeting the general diagnostic criteria for schizophrenia but not conforming to any of above subtypes or exhibiting the features of more than one of them without a clear predominance of a particular set of diagnostic characteristics.

6 American Psychiatric Association: Diagnostic And Statistical Manual of Mental Disorders. 5th ed. Arlington VA. American Psychiatric Association; 2013.
7 Gejman PV, Sanders AR, Duan J. The role of genetics in the etiology of schizophrenia. Psychiatr Clin North Am. 2010;33(1):35-66.
8 Chou IJ, Kuo CF, Huang YS, Grainge MJ, Valdes AM, See LC, et al. Familial Aggregation and Heritability of Schizophrenia and Co-aggregation of Psychiatric Illnesses in Affected Families. Schizophr Bull. 2017;43(5):1070-1078.
9 Karlsgodt KH, Sun D, Cannon TD. Structural and Functional Brain Abnormalities in Schizophrenia. Curr Dir Psychol Sci. 2010;19(4):226-231.
10 World Health Organization. The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines. 10th Revision. Geneva: World Health Organization; 2019.

- **Residual/ Chronic undifferentiated /Restzust and schizophrenia type:** A chronic stage in the development of a schizophrenic disorder in which there has been a clear progression from an early stage to later stage characterized by long-term, though not necessarily irreversible, "negative" symptoms.
- **Simple type:** An uncommon disorder in which there is an insidious but progressive development of oddities of conduct, inability to meet the demands of society, and decline in total performance. Delusion and hallucinations are not evident, and the disorder is less obviously psychotic than the hebephrenic, paranoid, and catatonic subtypes of schizophrenias.
- **Post-schizophrenic depression:** A depressive episode, which may be prolonged, arising in the aftermath of a schizophrenic illness. Some schizophrenic symptoms, either "positive" or "negative", must still be present but they no longer dominate the clinical picture. These depressive states are associated with an increased risk of suicide. If the patient no longer has any schizophrenic symptoms, a depressive episode should be diagnosed. If schizophrenic symptoms are still florid and prominent, the diagnosis should remain that of the appropriate schizophrenic subtype.

DIAGNOSIS

Symptom clusters in schizophrenia[11,12]

Positive symptoms	Negative symptoms	Disorganized symptoms
Delusions	Affective flattening	Inappropriate affect
Hallucinations	Poverty of speech	Disorganised behaviour
	Anhedonia- associability	Thought disorder
	Avolition-apathy	Loosening of association
	Attentional impairment	
	Psychomotor slowing	

Diagnostic criteria

DSM V[9] *295.90*	ICD 10[1] *F20.9*
a. Two (or more of the following, each present for a significant portion of time during a month period or less if successfully treated). At least one of these must be (1), (2), or (3): 1. Delusions 2. Hallucinations 3. Disorganized speech (e.g., frequent derailment or incoherence) 4. Grossly disorganized or catatonic behaviour 5. Negative symptoms	A minimum of one very clear symptom belonging to any one of the groups listed below as (a) to (d) or symptoms from at least two of the groups referred to as (e) to (i) should have been clearly present for most of the time during a period of 1 month or more. a) Thought echo, thought insertion or withdrawal and thought broadcasting. b) Delusions of control, influence or passivity, clearly referred to body or limb movements or specific thoughts, actions or sensations; delusional perception.

11 Ahuja N. A short text book of Psychiatry. In: Schizophrenia. 6th ed. New Delhi: Jaypee publishers; 2006:57-73.
12 Morrens M, Hulstijn W, Sabbe B. Psychomotor slowing in schizophrenia. Schizophr Bull. 2007;33(4):1038-53.

DSM V[9] *295.90*	ICD 10[1] *F20.9*
b. For a significant portion of the time since the onset of the disturbance, level of functioning in one or more major areas, such as work, interpersonal relations, or self-care, is marked below the level achieved prior to the onset (or when the onset is in childhood or adolescence, there is failure to achieve expected level of interpersonal, academic, or occupational functioning). c. Continuous signs of the disturbance persist for at least 6 months. This 6-month period must include at least 1 month of symptoms (or less if successfully treated) that meet Criterion A (i.e., active-phase symptoms) and may include periods of prodromal or residual symptoms. During these prodromal or residual periods, the signs of the disturbance may be manifested by only negative symptoms or by two or more symptoms listed in Criterion A present in an attenuated form (e.g., odd beliefs, unusual perceptual experiences). d. Schizoaffective disorder and depressive or bipolar disorder with psychotic features have been ruled out because either 1) no major depressive or manic episodes have occurred concurrently with the active phase symptoms, or 2) if mood episodes have occurred during active-phase symptoms, they have been present for a minority of the total duration of the active and residual periods of the illness. e. The disturbance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition. f. If there is a history of autism spectrum disorder or a communication disorder of childhood onset, the additional diagnosis of schizophrenia is made only if prominent delusions or hallucinations, in addition to the other required symptoms of schizophrenia, are also present for at least 1 month [or less if successfully treated].	c) Hallucinatory voices giving a running commentary on the patient's behaviour or discussing the patient among themselves, or other types of hallucinatory voices coming from some part of the body. d) Persistent delusions of other kinds that are culturally inappropriate and completely impossible, such as religious or political identity, or superhuman powers and abilities (e.g., being able to control the weather or being in communication with aliens from another world). e) Persistent hallucinations in any modality, when accompanied either by fleeting or half formed delusions without clear affective content or by persistent over-valued ideas, or when occurring every day for weeks or months on end. f) Breaks or interpolations in the train of thought, resulting in incoherence or irrelevant speech, or neologisms. g) Catatonic behaviour, such as excitement, posturing. or waxy flexibility, negativism, mutism and stupor. h) 'Negative' symptoms such as marked apathy, paucity of speech and blunting or incongruity of emotional responses, usually resulting in social withdrawal and lowering of social performance; it must be clear that these are not due to depression or neuroleptic medication. i) A significant and consistent change in the overall quality of some aspects of personal behaviour, manifested as loss of interest, aimlessness, idleness, a self-absorbed attitude and social withdrawal.

DIFFERENTIAL DIAGNOSIS[3,6]

Psychiatric	Differential features
Major depressive or bipolar disorder with psychotic or catatonic features	If delusions or hallucinations occur exclusively during a major depressive or manic episode, the diagnosis is depressive or bipolar disorder with psychotic features
Schizoaffective disorder	A major depressive or manic episode occurs concurrently with the active-phase symptoms and that the mood symptoms be present for a majority of the total duration of the active periods

Schizophreniform disorder and brief psychotic disorder	These disorders are of shorter duration than schizophrenia; in schizophreniform disorder, the disturbance is present for less than 6 months, and in brief psychotic disorder, symptoms are present for at least 1 day but less than 1 month
Delusional disorder	Delusional disorder can be distinguished from schizophrenia by the absence of the other symptoms characteristic of schizophrenia (e.g., delusions, prominent auditory or visual hallucinations, disorganized speech, grossly disorganized or catatonic behaviour, negative symptoms)
Schizotypal personality disorder	Schizotypal personality disorder may be distinguished from schizophrenia by sub threshold symptoms that are associated with persistent personality features.
Obsessive-compulsive disorder and body dysmorphic disorder	They are present with poor or absent insight, and the preoccupations may reach delusional proportions. But these disorders are distinguished from schizophrenia by their prominent obsessions, compulsions, preoccupations with appearance or body odor, hoarding, or body-focused repetitive behaviours
Post-traumatic stress disorder	Post-traumatic stress disorder may include flashbacks that have a hallucinatory quality, and hypervigilance may reach paranoid proportions. But a traumatic event and characteristic symptom features relating to reliving or reacting to the event are required to make the diagnosis
Autism spectrum disorder or communication disorders	These disorders have deficits in social interaction with repetitive and restricted behaviours and other cognitive and communication deficits
Substance/medication-induced psychotic disorder	Individuals with substance/medication-induced psychotic disorder may present with symptoms characteristic of for schizophrenia. The substance/medication-induced psychotic disorder can usually be distinguished by the chronological relationship of substance use to the onset and remission of the psychosis in the absence of substance use
Medical or Neurological	
• *Epilepsy* • *CNS infections* • *Brain tumors* • *Dementia of Alzheimer's type* • *Vit B_{12} deficiency* • *Endocrinopathies* • *Fabry's disease* • *Heavy metal poisoning* • *Homocystinuria* • *Huntington's disease* • *Pellagra* • *Pick's disease* • *Systemic lupus erythematosus* • *Wernicke's Korsakoff syndrome* • *Wilson's disease*	The medical evaluation should be done including a complete medical and family history, laboratory investigations

EVALUATION AND ASSESSMENT[13,14,15,16]

A comprehensive assessment of the patient and his/her caregivers needs to be carried out. The cornerstones of this assessment are detailed history taking and physical and mental state examinations. Efforts should be made to obtain information from all sources, especially the family.

- Comprehensive assessment of both patients and caregivers
- Complete history with information from all possible sources
- Physical examination- record vital signs such as blood pressure, weight etc.
- Mental state examination
- Establish diagnosis by ruling out secondary psychoses
- Areas to be evaluated: symptom-severity, symptom dimensions, comorbid physical, psychiatric and substance use conditions, risk of harm to self and others, level of functioning and socio-cultural milieu of the patient
- Basic investigations: haemogram, blood sugars, LFT, KFT, ECG (focus on QTc)
- Assessment of caregivers: knowledge and understanding of the illness, attitudes and beliefs regarding treatment, impact of the illness on them, personal and social resources
- Ongoing assessments: response to treatment, side effects, treatment adherence, the impact of patient's immediate environment, disability assessments, other health-care needs, ease of access and relationship with the treatment team
- Use of standardized rating scales to rate all aspects of illness mentioned below
- Psychological testing for cognitive functions
- Neuroimaging esp. in those with non-response to treatment, neurological signs and elderly patients.

The scales are mainly used to monitor the severity of positive and negative symptoms and track treatment response in schizophrenics and they are:

- PANSS (Positive And Negative Symptoms Scale)
- SAPS (Scale for the Assessment of Positive Symptoms)
- SANS (Scale for the Assessment of Negative Symptoms)
- NSA -16 (Negative Symptom Assessment -16)
- CGI-SCH (Clinical Global Impression Schizophrenia)
- CAINS (Clinical Assessment Interview for Negative Symptoms)

13 Grover S, Chakrabati S, Kulhara P, Avasthi A. Clinical Practice Guidelines for management of Schizophrenia. Indian J Psychiatry. 2017;59(5):19-33

14 Kumari S, Malik M, Florival C, Manalai P, Sonje S. An Assessment of Five [PANSS, SAPS, SANS, NSA-16, CGI-SCH] commonly used symptom rating scales in Schizophrenia and comparison to newer scales [CAINS, BNSS]. J Addict Res Ther. 2017;8(3):324.

15 Wciórka J, Anczewska M, Bembenek A, Gołębiewska M, Hochlewicz A, Nurowska K, et al. Clinical assessment of schizophrenic syndromes (CASS): rationale, construction, reliability and sensitivity evaluation, and an attempt at normalization of the new diagnostic tool. Psychiatr Pol. 2000;34(2):179-201.

16 Lako IM, Bruggeman R, Knegtering H, Wiersma D, Schoevers RA, Slooff CJ, et al. A systematic review of instruments to measure depressive symptoms in patients with schizophrenia. J Affect Disord. 2012;140(1):38-47.

- BNSS (Brief Negative Symptom Scale)
- CASS (Clinical Assessment of Schizophrenic Syndromes)
- CDSS (Calgary Depression Scale for Schizophrenia).

PREVENTION[10,17,18]

Primary Prevention: Essentially involves education programmes about the association of obstetric complications and the increased risk of schizophrenia. Interventions related to primary prevention can be delivered to the general population or to different target populations.

They involve various combinations of the following strategies:

- Community education programmes about psychoses
- Integration of mental health services in primary care
- Detection by general practitioners and other community agencies of early warning signs of severe mental disorder
- Intensive home-based assessment and interventions targeted at people at risk and key persons in their social networks to enhance stress management strategies and problem-solving skills.

Secondary Prevention: Involves intervention at the prodromal phase. It aims to modify the course of an illness by early intervention. Early intervention can result in reduction in morbidity and better quality of life for the patients and their families. Possible risk faced by prodromal patients, such as unnecessary stigmatisation, and the role of drug treatment during intervention at this stage.

Tertiary Prevention: Drug and psychosocial intervention are indicated as part of tertiary prevention to prevent further disability in the illness. It aims to reduce the burden of established disorder by optimizing treatment and rehabilitation.

RED FLAGS [8,14]

- Presence of suicidal behavior which puts the life of the patient at risk
- Presence of severe agitation or violence which puts the life of others at risk
- Refusal to eat which puts the life of the patient at risk
- Severe malnutrition
- Patient unable to care for self to the extent that she/he requires constant supervision or support
- Catatonia
- Presence of general medical or comorbid psychiatric conditions which make management unsafe and ineffective in the outpatient setting
- Lack of social support
- Poor drug compliance.

17 Lee C, McGlashan TH, Woods SW. Prevention of Schizophrenia. CNS Drugs 19. 2005:193–206.
18 Brown AS, McGrath JJ. The prevention of schizophrenia. Schizophr Bull. 2011;37(2):257-61.

MANAGEMENT [3,10,14,19]

Treatment options for management of schizophrenia can be broadly classified as:

A. Psychosocial interventions

These increase social abilities, self-sufficiency, practical skills, and interpersonal communication in schizophrenia patients. The goal is to enable persons who are severely ill to develop social and vocational skills for independent living. Emphasis should be given to psychosocial therapies like:

✓ *Family interventions*

Persons with schizophrenia and their families who have ongoing contact with each other should be offered a family intervention, the key elements of which include a duration of at least 9 months, illness education, crisis intervention, emotional support, and training in how to cope with illness symptoms and related problems.

Some common elements are:

- Engagement of the family early in the treatment process in a "no fault" atmosphere
- Education about schizophrenia (the vulnerability-stress model, risk factors)
- Variation in prognosis, rationale for various treatments, suggestions for coping with the disorder
- Communication training directed at enhancing the clarity of communication and improving the exchange of both positive and negative feedback within the family
- Problem-solving training aimed at improving ways of managing everyday
- Problems, coping with stressful life events, and planning to deal with
- Anticipated stressors, by generalizing problem-solving skills
- Crisis intervention at times of extreme stress or when signs of relapse are evident.

✓ *Supported employment*

Persons with schizophrenia who have the goal of employment should be offered supported employment, the key elements of which include individualized job development, rapid placement emphasizing competitive employment, ongoing job support, and integration of vocational and mental health services.

✓ *Assertive community treatment*

Systems of care serving persons with schizophrenia should include a program of assertive community treatment (ACT). This intervention should be provided to individuals who have any of the following characteristics: high risk for repeated hospitalizations, difficulty remaining in traditional services, or recent homelessness. The key elements of ACT include a multidisciplinary team (including a psychiatrist), a shared caseload among team members, direct service provision by team members, a high frequency of patient contact, low patient-to-staff ratios, and outreach to patients in the community.

19 Dixon LB, Dickerson F, Bellack AS, Bennett M, Dickinson D, Goldberg RW, et al. Schizophrenia Patient Outcomes Research Team (PORT). The 2009 schizophrenia PORT psychosocial treatment recommendations and summary statements. Schizophr Bull. 2010;36(1):48-70.

- ✓ *Skills training*

  Persons with schizophrenia who have skill deficits such as problems with social skills or activities of daily living should be offered skills training. The key elements of this intervention include behaviorally based instruction, modeling, corrective feedback, and contingent social reinforcement. Clinic-based skills training should be supplemented with practice and training in the individual's day-to-day environment.

- ✓ *Cognitive behavioral therapy*

  Persons with schizophrenia who have residual psychotic symptoms while receiving adequate pharmacotherapy should be offered adjunctive cognitive behaviorally oriented psychotherapy. The key elements of this intervention include a shared understanding of the illness between the patient and therapist, the identification of target symptoms, and the development of specific cognitive and behavioral strategies to cope with these symptoms.

- ✓ *Token economy interventions*

  Systems of care that deliver long-term inpatient or residential care should provide a behavioural intervention based on social learning principles. The key elements of this intervention, often referred to as a token economy, are contingent positive reinforcement for clearly defined target behaviours, individualized treatment approach, and the avoidance of punishing consequences.

- ✓ *Individual supportive therapy*

  A supportive empathic relationship between patients and professionals, in which good listening promotes a lasting therapeutic alliance is an essential part of good practice. Additional elements could include support and advice, encouraging continued engagement, treatment-adherence and healthy lifestyles. Efforts to minimize stress may also be beneficial. Individual support along with medication is the most commonly practiced treatment in schizophrenia. Patients and families consistently rank individual support as among the most highly valued services offered to patients with schizophrenia.

- ✓ *Group therapies*

  They use a group context to provide patient with opportunities for mutual support, the sharing of common experiences, feedback about their social behaviors, a setting to practice new social skills, and an efficient educational forum to learn about schizophrenia and its treatment.

- ✓ *Psychoeducation*

  Psychoeducation may be considered both for the patient and family members. The aim is to educate the patient and family about the illness. Simple and brief explanations about the nature of the patient's illness, treatments, likely side effects, likely length of treatment etc. can be

offered. Relatives also need to be given time to confront the painful fact of the illness, and what it entails for the patient and the family as a whole. Treatment adherence will be another main objective at this stage. Prior to every session, feedback of the previous sessions may be taken and psychoeducation is to be tailored to the needs of the patient and the caregivers.

B. Lifestyle and dietary modifications

All the patients are to be advised for a change in the lifestyle and diet to reduce the risk of metabolic side effects and cardiovascular morbidity and mortality. These include physical exercises, dietary modifications and abstinence from smoking.

C. Rehabilitation

Rehabilitation programmes need to be culturally moulded and adapted to the needs of patients and their families. Relatively simple and inexpensive strategies can form a part of the overall psychosocial intervention package.

Homoeopathic management

Homoeopathy is a useful treatment option in psychiatric cases as it treats patient holistically taking mind and body into account. A few studies[20,21,22] were conducted which proved the effectiveness of homoeopathic medicines in schizophrenia in untreated cases and anti-psychotic treatment resistant cases.

Patients who are on conventional anti-psychotic treatment frequently experience side effects before they experience clinical improvement. The patients who are on homoeopathic medicines do not have any side effect.

Hahnemann has described mental disease as one-sided disease (Aph. 210-230) where there is derangement of mind and disposition. The disease is psoric in origin and chronic in nature.

Homoeopathic approach to patients of schizophrenia[23]

- These cases are difficult to perceive and manage as these are mostly one-sided mental diseases.
- In non-psychotic patients, the mind or the consciousness often prohibits the free expression of the subconscious. But in these patients, it goes one step further – it creates a false 'reality' with their pathological delusions and feelings, an additional layer upon their subconscious. When we give them the free space to traverse their inner journey, it becomes difficult to differentiate between the common pathological symptoms and PQRS symptoms. E.g., Delusions of being

20 Oberoi P, Gopinadhan S, Sharma A, Nayak C, Goutham K. Homoeopathic management of Schizophrenia: A Prospective, no comparative, open label observational study. IJRH. 2016:10(2):108-18.
21 Janardhanan NK, Gopinadhan S, Pramanik MS, Shaw R, Blachandran VA, Kurup TN, et al. Behavioral disorders. Series 1: Clinical Research studies; New Delhi; Central Council for Research in Homoeopathy: 2008.p.1-14.
22 Balachandran VA. Homoeopathic management of Schizophrenia- an analytical report. CCRH Quarterly Bulletin. 1996; 18:15-8.
23 Bodman F. Insights into homoeopathy. England: Beaconsfield publishers;1990.

persecuted or being followed are common pathological symptoms in mental diseases and yet they can be characteristic too. So how do we separate the common from the characteristic symptoms?

- In such cases, the paucity of symptoms also poses a hurdle to complete the totality of symptoms. So, the importance of objective assessment from observation of physicians, relatives or caregivers is always important.
- Homoeopathy focuses on the individualistic qualities of the person for which the understanding of the person is most important. So, in such cases, it is always important to make an attempt to understand the "schizophrenic person not the schizophrenia" which is available before the symptoms started or during the lucid phases.
- Physical symptoms play an important role in formulating the totality of symptoms and treating mental diseases. Bodman has mentioned in his write up related to the importance of physical concomitants in cases of mental illnesses.

Hahnemann in Organon of Medicine has mentioned that if the mental disease is very acute and violent, then an acute medicine like *Aconite, Belladonna, Stramonium, Hyoscyamus* etc. should be given first, later followed by a deep acting anti-psoric medicine.[24]

Many homoeopathic medicines described in literature [22,25,26] have predominant mental symptoms akin to schizophrenia. In Synthesis repertory[27], total 36 medicines for schizophrenia are found in chapter MIND under the rubric 'Schizophrenia'.

According to the study conducted by CCRH at Central Research Institute [H], Kottayam, Kerala, India, *Sulphur, Lycopodium, Natrum mur, Pulsatilla* and *Phosphorus* were found to be the most useful medicines in treating schizophrenia patients. Some small medicines for the symptoms of schizophrenia are: ***Absinthium***: Delirium with hallucinations and loss of consciousness. Cerebral irritation, hysterical and infantile spasms. ***Crocus sativus***: Anger with violence followed repentance, pleasant mania. Sudden changes from hilarity to melancholy. ***Eupionum***: Sensation as if the whole body was made of jelly. Intense sweat from the slightest exertion. ***Moschus***: Uncontrollable laughter, anxiety with palpitations. Remedy for hysteria and nervous paroxysms, fainting fits and convulsions, catalepsy, etc. ***Scutellaria laterifolia***: Nervous sedative, where nervous fear predominates. Inability to fix attention. Confusion. ***Valeriana officianalis***: Hallucinations at night. Changeable disposition. However, considering the totality of symptoms of the patients many other drugs are also indicated for schizophrenia.

24 Dudgeon RE. Organon of Medicine. Reprint edition. Indian Books and Periodicals Publishers. 2004.
25 Boericke W., Boericke's New Manual of Homoeopathic Materia Medica with Repertory: Third Revised and Augmented edition based on ninth edition. New Delhi: B Jain Publishers;2010.
26 Allen.H.C. Allen's Keynotes- Rearranged and classified with leading remedies of the Materia Medica and bowel nosodes. 10th reprint edition. New Delhi: B. Jain Publishers [P] Ltd.;2006.
27 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002.

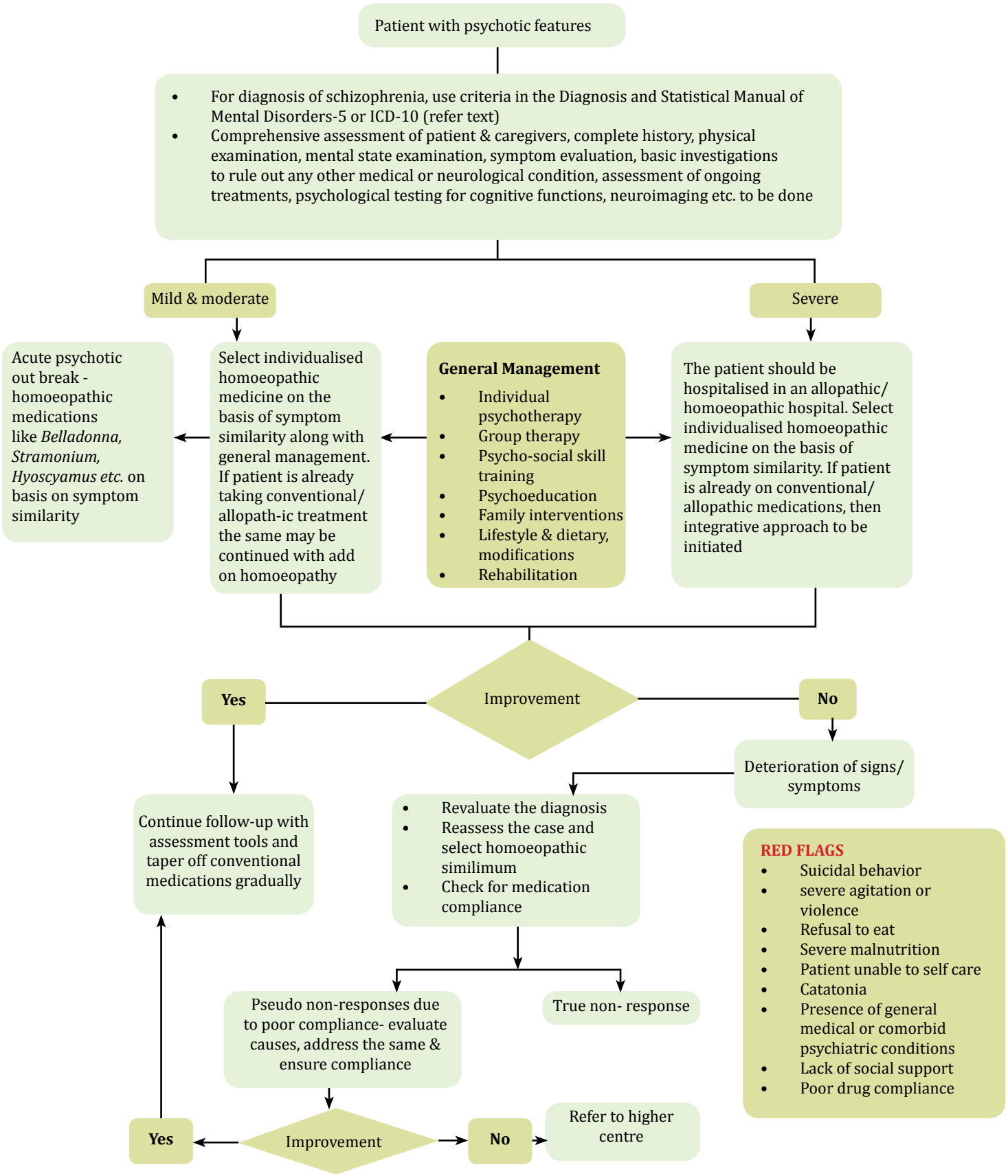
The commonly prescribed constitutional homoeopathic medicines are as follows:

Medicines	General indications	Characteristic mental symptoms related to schizophrenia
Belladonna	*Congestion is the keynote of the medicine; hot, red skin, flushed face, glaring eyes, throbbing carotids. Excited mental state, delirium, restless sleep, convulsive movements. Dryness of mouth and throat with aversion to water. Pains that come and go suddenly*	• Hallucinations; sees monsters, hideous faces • Violent delirium; frightful images, disposition to bite, spit, strike the attendants and tear things; furious, rages; breaks into fits of laughter and gnashes the teeth; disinclined to talk tries to escape • Perversity, with tears • Worse from touch, motion, noise, draught of air, looking at bright, shining objects, after 3 p.m., night, after midnight • Better from rest
Stramonium	*Painlessness of complaints; chorea, mania and fever delirium; young plethoric children, furious, malicious, fearful, desires light and company, worse in the dark and solitude*	• Disposed to talk continually; laughing, praying, beseeching, entreating • Imagines all sorts of things; that she is double, lying cross- wise, etc. Head feels as if scattered about • Worse looking at bright or shining objects, after sleep • Better from bright light, from company
Hyoscyamus	*Increased cerebral activity without inflammation; no control over urine and bowel; convulsions and twitching especially of the tongue; jealousy, loquacious, irritable, fear of being left alone; of running water even on hearing it; insects; snakes, of shinning objects, fire, glass, etc; aggravation at night*	• Fears: being alone; poison; being bitten; being sold; to eat or drink; to take what is offered; suspicious of some plot • Lascivious mania: immodesty, will not be covered, kicks off the clothes, exposes the person; sings obscene songs; lies naked in bed and chatters • Delirium with restlessness, jumps out of bed, tries to escape; makes irrelevant answers; thinks he is in the wrong place; talks of imaginary doings, but has no wants and makes no complaints • Worse from mental affections, jealousy, unhappy love
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sit stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve*	• Movement in abdomen as of a child • Delusions, thinks rags beautiful things, that he is immensely wealthy. • Worse warmth in bed, washing, bathing, changeable weather • Better in dry, warm weather

Medicines	General indications	Characteristic mental symptoms related to schizophrenia
Cannabis indica	*Great apprehension of approaching death; time seems too long; a few seconds seem ages; distance seems immense; a few rods seem miles. A condition of intense exaltation, in which all perceptions and conceptions, all sensations and all emotions are exaggerated to the utmost degree*	• Constantly theorizing, laughs immoderately at every trifling word spoken to him • Full of fun and mischief, then perhaps moaning and crying • Sensation as if the calvarium was opening and shutting • Sensation of swelling in the perineum or near the anus, as if sitting on a ball
Lachesis mutus	*Hot patient; thin and emaciated; hemorrhagic diathesis; great sensitiveness to touch; hot flushes and perspiration. Desires oysters, alcohol, farinaceous food, all complaints worse after sleep; loquacious, jumps from one idea to another, jealous, suspicious, indolent*	• Nocturnal delusion of fire • Sad in the morning; no desire to mix with the world • Restless and uneasy; does not wish to attend to business; wants to be off somewhere all the time • All complaints worse after sleep
Anacardium	*Sudden loss of memory; disposed to be malicious, seems bent on wickedness; lack of confidence in himself and others; apt to choke when eating and drinking; swallows food and drink hastily; symptoms disappear while eating*	• Feels as though he had two wills, one commanding him to do what the other forbids • When walking, is anxious, as if someone were pursuing him; suspects everything around him • Strange temper laughs at serious matters and is serious over laughable things • Thinks herself a demon; curses and swears • Sensation as of a hoop or band around a part; or as of a dull, blunt instrument pressing; as of a plug-in inner parts
Ignatia amara	*Marked hyperaesthesia of all the senses, and a tendency to clonic spasms; great contradiction. Worse in the morning, open air, after meals, coffee, smoking, liquids, external warmth. Better while eating, change of position; Hysteric women, sensitive, easily excited nature women having mild disposition, quick to perceive, rapid in execution*	• Changeable mood, not communicative • Emotional element is upper most and coordination of function is interfered with, effects of grief and worry
Platinum metallicum	*Hysterical patients, alternately gay and sad, who cry easily. Arrogant, proud, contemptuous, and haughty; pitiful; "looking down" upon people usually venerated*	• Mental delusions, as if everything about her were small; all persons physically and mentally inferior, but she physically large and superior • Sensation of growing larger in every direction

Medicines	General indications	Characteristic mental symptoms related to schizophrenia
Veratrum album	*Chilly patient: coldness, weakness and cyanosis are the trio of the remedy; thin, anaemic; great prostration with vertigo, pale face and clean tongue; collapse; cold perspiration on forehead; voracious appetite. Craves fruits, juicy and cold things, ice and salt; aversion to warm food; frenzy, shrieks, curses, desire to cut and tear things, howling all night*	• Violent mania alternates with silence and refusal to talk • Delusions of impending misfortunes
Sabadilla	*Chilly patient; tendency for respiratory allergies; copious salivation; thirstless; canine appetite for sweets, farinaceous food and hot things; nervous, timid, easily startled*	• Imagines that he is very sick; that parts are shrunken; that she is pregnant; that she has cancer • Has erroneous notions about himself
Petroleum	*Feels that death is near and must hurry to settle affairs; loses his way in streets*	• During sleep or delirium: imagines that one leg is double; that another person lies alongside of him in same bed, that there are two babies in the bed • Marked aggravation from mental emotions
Cocculus indicus	*Bad effects: from loss of sleep, mental excitement and night watching; feel weak if they lose but one hour's sleep; convulsions after loss of sleep*	• Irresistible inclination to sing • Profound sadness • Mind benumbed. Slow in comprehension

ALGORITHM OF TREATMENT PROCESS FOR SCHIZOPHRENIA


Patient with psychotic features
For diagnosis of schizophrenia, use criteria in the Diagnosis and Statistical Manual of Mental Disorders-5 or ICD-10 (refer text)
Comprehensive assessment of patient & caregivers, complete history, physical examination, mental state examination, symptom evaluation, basic investigations to rule out any other medical or neurological condition, assessment of ongoing treatments, psychological testing for cognitive functions, neuroimaging etc. to be done
Mild & moderate
Severe
Acute psychotic out break - homoeopathic medications like Belladonna, Stramonium, Hyoscyamus etc. on basis on symptom similarity
Select individualised homoeopathic medicine on the basis of symptom similarity along with general management. If patient is already taking conventional/ allopath-ic treatment the same may be continued with add on homoeopathy
General Management
Individual psychotherapy
Group therapy
Psycho-social skill training
Psychoeducation
Family interventions
Lifestyle & dietary, modifications
Rehabilitation
The patient should be hospitalised in an allopathic/ homoeopathic hospital. Select individualised homoeopathic medicine on the basis of symptom similarity. If patient is already on conventional/ allopathic medications, then integrative approach to be initiated
Improvement
Yes
No
Deterioration of signs/ symptoms
Continue follow-up with assessment tools and taper off conventional medications gradually
Revaluate the diagnosis
Reassess the case and select homoeopathic similimum
Check for medication compliance
RED FLAGS
Suicidal behavior
severe agitation or violence
Refusal to eat
Severe malnutrition
Patient unable to self care
Catatonia
Presence of general medical or comorbid psychiatric conditions
Lack of social support
Poor drug compliance
Pseudo non-responses due to poor compliance- evaluate causes, address the same & ensure compliance
True non- response
Improvement
Yes
No
Refer to higher centre

CHAPTER 18

SUBCLINICAL HYPOTHYROIDISM

SUBCLINICAL HYPOTHYROIDISM

CASE DEFINITION[1,2]

Subclinical hypothyroidism (SCH), a biochemical state, is defined as increased serum thyroid-stimulating hormone (TSH) levels, with circulating thyroxine (T4) and tri-iodothyronine (T3) concentrations within the population reference range.

INCIDENCE/PREVALENCE

- The incidence of SCH varies between 4 and 10% depending upon the gender, age and population.[3,4]
- In different prevalence studies from India subclinical hypothyroidism is found to be around 10.95% and 11.3% in general population and more in females in comparison to males. [5,6]

CLASSIFICATION[1]

SCH is generally classified in two categories according to serum TSH level:

- Mild with increased serum TSH levels (4.0–10.0 mU/l)
- Severe with increased serum TSH value (>10 mU/l)

ETIOLOGY[7,8,9,10]

The etiology of SCH is same as that of overt hypothyroidism. It is most often triggered by chronic lymphocytic thyroiditis (goitrous Hashimoto's thyroiditis and atrophic thyroiditis), an autoimmune disorder of the thyroid gland that is the most common cause of decreased thyroid hormone production in patients with acquired mild, subclinical, or overt hypothyroidism.[2]

Thyroid- related causes	Systemic causes
Hashimoto's thyroiditis (most common cause)	Diabetes mellitus
Iodine deficiency	Celiac disease
Overtreatment of Graves' disease	Chronic renal failure
Transient neonatal hyperthyrotropinemia	Syndromes (e.g., Turner syndrome, Down syndrome etc.)

1 Pearce SH, Brabant G, Duntas LH, Monzani F, Peeters RP, Razvi S, et al. 2013 ETA Guideline: Management of Subclinical Hypothyroidism. Eur Thyroid J. 2013;2(4):215-28.
2 Cooper DS, Biondi B. Subclinical thyroid disease. Lancet. 2012; 379(9821):1142–1154.
3 Canaris GJ, Manowitz NR, Mayor G, Ridgway EC. The Colorado thyroid disease prevalence study. Arch Intern Med. 2000;160(4):526–534.
4 Vanderpump MP, Tunbridge WM, French JM, Appleton D, Bates D, Clark F, et al. The incidence of thyroid disorders in the community: a twenty-year follow-up of the Whickham Survey. Clin Endocrinol. 1995; 43(1):55–68.
5 Unnikrishnan AG, Kalra S, Sahay RK, Bantwal G, John M, Tewari N. Prevalence of hypothyroidism in adults: An epidemiological study in eight cities of India. Indian J Endocr Metab. 2013;17(4):647-52.
6 Deshmukh V, Behl A, Iyer V, Joshi H, Dholye JP, Varthakavi PK. Prevalence, clinical and biochemical profile of subclinical hypothyroidism in normal population in Mumbai. Indian J Endocr Metab. 2013;17(3):454-9.
7 Arrigo T, Wasniewska M, Crisafulli G, Lombardo F, Messina MF, Rulli I, et al. Subclinical hypothyroidism: the state of the art. J Endocrinol Invest. 2008;31(1):79–84.
8 Cooper DS. Clinical practice. Subclinical hypothyroidism. N Engl J Med. 2001;345(4):260–265.
9 Garber JR, Cobin RH, Gharib H, Hennessey JV, KleinI, Mechanick JI, et al. Clinical practice guidelines for hypothyroidism in adults: cosponsored by the American Association of Clinical Endocrinologists and the American Thyroid Association. Thyroid OffJ Am Thyroid Assoc. 2012;18(6):988-1028.
10 Basaria S, Cooper DS. Amiodarone and the thyroid. Am J Med. 2004;118(7):706 –714.

Thyroid- related causes	Systemic causes
Variations in genes of TSH/thyroid hormone pathway	Medication (carbamazepine, valproic acid, domperidone etc.)
X- ray treatment of the head- neck region	Overweight/ obesity
Thyroid infiltration (sarcoidosis, cystinosis, amyloidosis, primary thyroid lymphoma etc.)	Toxic substances, industrial & environmental agents

DIAGNOSIS

Clinical Presentation[11,12,13,14]

The type of symptoms people relates to SCH include those of overt hypothyroidism:

- Fatigue, muscle cramps, cold sensitivity, dry skin, voice changes, and constipation.
- Other symptoms include poor memory, slowed thinking, weak muscles, puffy eyes, anxiety, and depression
- Goitre-is the most common clinical sign, reported to be twice as prevalent as observed in the general population[2]
- Weight gain- especially in children
- Increased cholesterol levels, especially in adult population[15]
- Impaired growth velocity
- Anemia and weakness
- Sleepiness
- Impaired psychomotor and cognitive development

Careful history taking which includes family, personal & medical history.

INVESTIGATIONS[2,16]

Physical examinations

- Observe facial appearance and to perform general physical examination.
- Interrogation of symptoms such as constipation, poor memory, fatigue, slow thinking, anxiety, depression, muscle weakness, hoarseness and cold intolerance, etc.
- Eliciting signs such as anemia, overweight/obesity, BMI, BP, short stature or impaired growth velocity, thinning of hair, etc.

11 Rapa A, Monzani A, Moia S, vivenze D, Bellone S, Petri A, et al. Subclinical hypothyroidism in children and adolescents: a wide range of clinical, biochemical, and genetic factors involved. J Clin Endocrinol Metab. 2009; 94(7):2414–2420.
12 Wu T, Flowers JW, Tudiver F, Wilson JL, Punyasavatsut N. Subclinical thyroid disorders and cognitive performance among adolescents in the United States. BMC Pediatric. 2006;6:12.
13 Vanderpump MP, Tunbridge WM, French JM, Appleton D, Bates D, Clark F, et al. The development of ischemic heart disease in relation to autoimmune thyroid disease in a 20-year follow-up study of an English community. Thyroid. 1996;6(3):155–60.
14 Ajmani NS, Sarbhai V, Yadav N, Paul M, Ahmad A, Ajmani AK. Role of thyroid dysfunction in patients with menstrual disorders in tertiary care center of walled city of Delhi. J Obstet Gynaecol India. 2016;66(2):115-9.
15 Marwaha RK, Tandon N, Garg MK, Kanwar R, Sastry A, Narang A, et al. Dyslipidemia in subclinical hypothyroidism in an Indian population. Clin Biochem. 2011;44(14-15):1214-7.
16 Kabadi UM. Subclinical hypothyroidism- Natural course of the syndrome during a prolonged follow-up study. Arch Intern Med. 1993;153(8):957-61.

Local examination

- Thyroid gland should be palpated as per WHO guidelines (finger rolling method from behind) for grading and consistency of thyroid gland.

Laboratory tests

- Serum TSH is the single best test for screening. TSH value above the normal upper limit in the presence of normal thyroid hormone levels should raise the suspicion of SCH. Follow up of the confirmed case should be done after 4-6 weeks. The measurement of serum TSH and fT4 should be repeated every 3–4 months once the TSH is within normal limits.
- Antithyroglobulin antibodies (TG-Abs) and anti-thyroperoxidase antibodies (TPO-Abs) titer to be checked for; also used for cases of carcinoma. It should not be repeated often in follow-up.
- Thyroid ultrasonography should be performed whenever available.

DIFFERENTIAL DIAGNOSIS[17,18,19]

There are several non-thyroid factors which can transiently elevate TSH and lead to misdiagnosis as subclinical hypothyroidism. These consist of the following situations:

- Recovery from non-thyroidal illness: During the period of recovery from non-thyroidal illness, where a momentarily raised serum TSH level is detected after a stage of TSH repression.
- Pituitary lesions: Pituitary TSH-producing adenomas, thyroid hormone resistance, and rare TSH receptor mutations. In patients with pituitary TSH producing adenomas or thyroid hormone resistance, the high TSH is associated with raised serum free T4 and/or T3 levels. On the contrary, subjects with subclinical hypothyroidism have normal free T4 levels. Patients with TSH resistance due to abnormality in the TSH receptor have high serum TSH values and normal or low serum free T4 and T3 levels.
- Adrenal deficiency: Non-diagnosed and untreated adrenal deficiency.
- Rheumatoid factors may result in some hindrance in immunometric tests.
- Medications: Amiodarone, metoclopramide, amphetamine etc.
- Chronic renal failure

COMPLICATIONS[20,21,22,23]

- Systemic symptoms of hypothyroidism
- Progression to overt hypothyroidism

17 Gosi SK, Garla VV. Subclinical Hypothyroidism. StatPearls [Internet]. 2020 [cited on 18 March 2021]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK536970/
18 Després N, Grant AM. Antibody interference in thyroid assays: a potential for clinical misinformation. Clin Chem. 1998; 44(3):440-54.
19 Ayala AR, Danese MD, Ladenson PW. When to treat mild hypothyroidism. Endocrinol Metab Clin North Am. 2000; 29(2):399-415.
20 Duntas LH, Wartofsky L. Cardiovascular risk and subclinical hypothyroidism: focus on lipids and new emerging risk factors. What is the evidence? Thyroid. 2007;17(11):1075–84.
21 Roberts LM, Pattison H, Roalfe A, Franklyn J, Wilson S, Hobbs FDR, et al. Is subclinical thyroid dysfunction in the elderly associated with depression or cognitive dysfunction? Ann Intern Med. 2006;145(8):573–81.
22 Christ-Crain M, Meier C, Huber PR, Staub J-J, Müller B. Effect of l-thyroxine replacement therapy on surrogate markers of skeletal and cardiac function in subclinical hypothyroidism. Endocrinologist. 2004;14(3):161–6.
23 Klein RZ, Haddow JE, Faix JD, Brown RS, HermosRJ, Pulkkinen A, et al. Prevalence of thyroid deficiency in pregnant women. Clin Endocrinol (Oxf). 1991;35(1):41–6.

- Cardiovascular disease- In patients with full-blown hypothyroidism, serum levels of triglycerides, total cholesterol and low- density lipoprotein (LDL) cholesterol may be elevated. In patients with subclinical hypothyroidism, not surprisingly, the same changes are present but are less marked and less consistent. This pattern of lipid abnormalities, of course, is important because it is risk factor for atherosclerotic cardiovascular disease. There is an increased risk of coronary heart events, heart failure and cardiovascular mortality among affected adults
- Neuropsychiatric symptoms-anxiety, depression or cognitive dysfunction
- Neuromuscular dysfunction
- Complication in pregnancy- risk factor for miscarriage and low birth weight infant, poor development.

MANAGEMENT

General management[1,7,24]

The BMJ clinical practice guidelines[25] issued a strong recommendation against thyroid hormones in adults with SCH [elevated TSH levels and normal free T4 (thyroxine) levels] because there were no important benefits from treatment and in addition, possibility of harms cannot be ruled out. Guidelines recommend treatment only when people are younger, symptomatic, a woman wanting to be pregnant which has implication on mother and baby or have other indications for prescribing (such as cardiovascular disease or antibodies to thyroid peroxidase). Clinicians should monitor the progression or resolution of the thyroid dysfunction. Management of SCH depends on many factors: age, other prevailing diseases, comorbidities etc. and presence of symptoms or no symptoms. The target of treatment is to lower the patient's serum TSH levels within the normal reference values and prevent any complications. As the average serum TSH for the general population is approximately 1.4 mU/L, with 90 % of population with serum TSH values <3.0 mU/L, several physicians propose a clinical TSH target of 0.5-2.5 mU/L in young and middle-aged persons. Once SCH has been diagnosed, a repeat thyroid function test is desirable and should be re-checked within 8–12 weeks along with thyroid autoantibodies. When abnormal serum TSH concentration has been reached, TSH should be analysed again after 3-6 months and then every year.

Homoeopathic management

Homeopathic intervention has been found to be effective in various endocrine diseases. The homeopathic treatment should be designed on the basis of symptomatology of the patient; physical findings; constitution; past/personal/ family/treatment history of the patient etc. There are very

24 Fatourechi V, Lankarani M, Schryver PG, Vanness DJ, Long KH, Klee GG. Factors influencing clinical decisions to initiate thyroxine therapy for patients with mildly increased serum thyrotropin (5.1-10.0 mIU/L). Mayo Clin Proc. 2003;78(5):554–60.

25 Bekkering GE, Agoritsas T, Lytvyn L, Heen AF, Feller M, Moutzouri E, et al. Thyroid hormones treatment for subclinical hypothyroidism: a clinical practice guideline. BMJ. 2019; 365:12006.

few studies done for subclinical hypothyroidism in homeopathy.[26,27,28,29] Homoeopathic medicines may help in reducing the serum TSH values and antiTPOab titers, prevent progression to overt hypothyroidism.

In Synthesis repertory[30], 41 medicines are found in chapter GENERAL under the rubric 'Hypothyroidism'. The frequently verified characteristic features of some organospecific remedy is: ***Thyroidinum:*** Marked sensitiveness to cold. Hypothyroidism after acute diseases, i.e., weakness. Easy fatigue, weak pulse, tendency to fainting, palpitation, cold hands and feet, low blood pressure, chilliness and sensitive to cold, craving for large amount of sweets.

The list of frequently prescribed polychrest medicines along with their indications can be summarized as:[31,32]

Medicines	General indications
Calcarea carbonica	Chilly patients; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweat profusely while sleeping; sour smelly discharges; longing for fresh air; desire for eggs and indigestible things, sweets. Aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated. Forgetful, confused. Pituitary and thyroid dysfunction
Calcarea sulphuricum	Sensitive to both cold and heat; tendency to the formation of abscesses; muscles are flabby; disposed to hemorrhages. Thick yellow discharges from the mucous membranes. Absent minded; irritable; easily angered. The external throat is swollen; the glands are enlarged and painful
Carcinosinum	Thin, delicate looking, fine skin and dark complexion or "Café au lait" hue, light - colored eyes with pigmented moles. Strong family history of cancer, tuberculosis and other chronic illnesses; history of pneumonia, mumps, adenoids, typhoid, etc.; history of paternal control in childhood; affectionate, loving, sensitive to other's suffering, sympathetic to animals, fond of them, passionate, fastidious, fearful, sensitive to reprimands
Causticum	Chilly patient; sad, hopeless; intensely sympathetic. Skin is dirty white sallow, with warts, especially on the face. Children are slow to walk. Burning, rawness and soreness are characteristic stress incontinence. Restless legs at night. Worse from dry, cold winds, clear, fine weather; better in damp, wet weather, warmth
Kali carbonicum	Chilly patient; puffiness, weakness, backache and profuse perspiration; worse in the morning 2am-4a.m.; excessive flatulence; distended stomach as if it would burst Intolerance to cold weather. Hypothyroidism. Constipation; large difficult stool

26 Ghare P, Jadhav AB, Patil AV. A clinical study to see the effect of thyroidinum, a homoeopathic preparation on thyroid peroxidase antibody in subclinical hypothyroidism of age group between 18-70 years. Int J Health Sci Res. 2020; 10(2):18-22.

27 Chauhan VK, Manchanda RK, Narang A, Marwaha RK, Arora S, Nagpal L, et al. Efficacy of homeopathic intervention in subclinical hypothyroidism with or without autoimmune thyroiditis in children: an exploratory randomized control study. Homeopathy. 2014; 103(04): 224-231.

28 Bhattacharya P, Giri S, Ghosh B, Banerjee A. Symptomatic Subclinical Hypothyroidism Treated with Homoeopathy: Case Reports. Homœopathic Links. 2020; 33(02): 120-125.

29 Narang A, Marwaha RK, Khanna VK. Evidence to evaluate the efficacy of homoeopathic treatment in Sub-Clinical Hypothyroidism (SCH). Asian journal of homoeopathy. 2007;1(1):10-13.

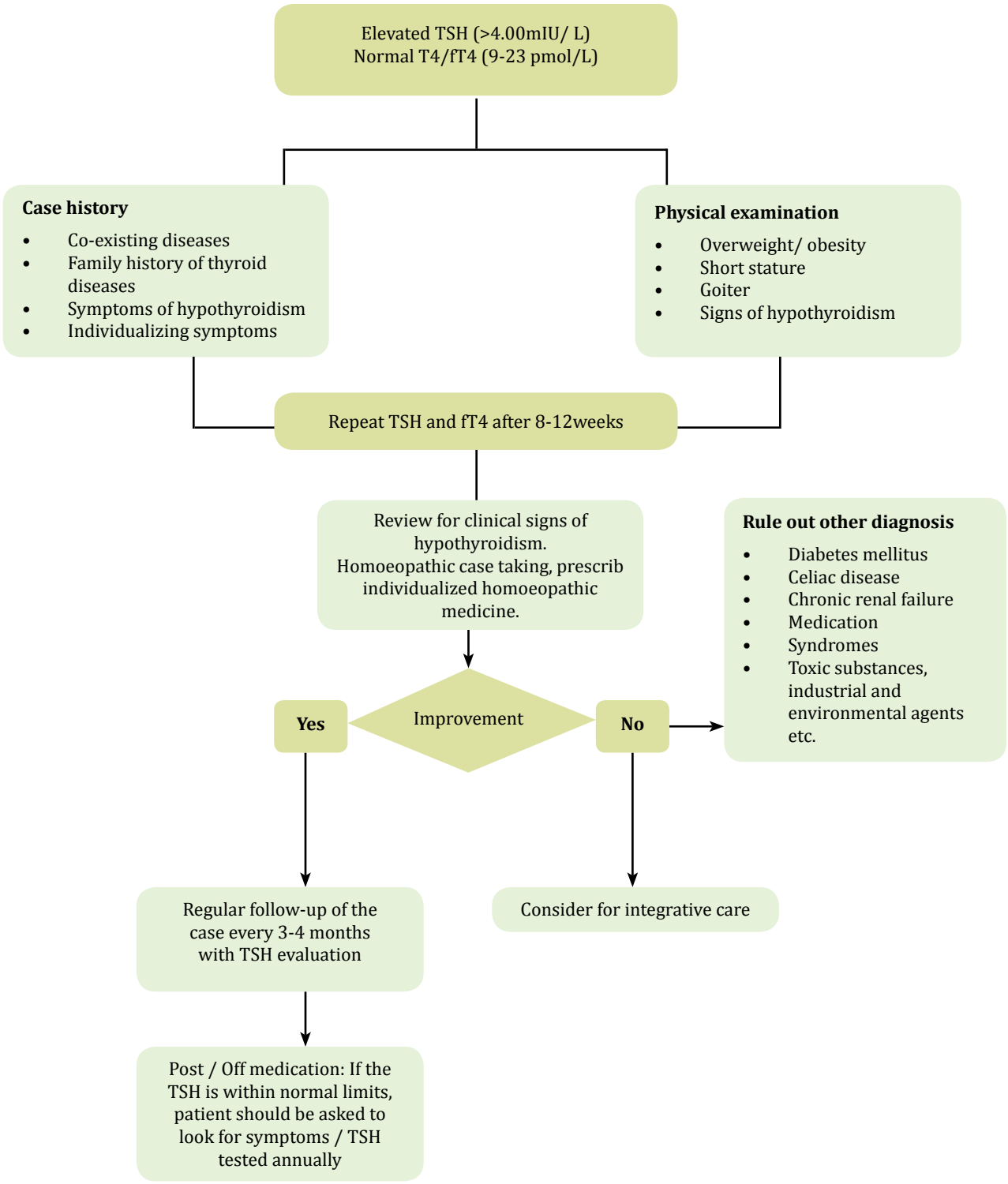
30 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002.

31 Boericke W. New Manual of Homoeopathic Materia Medica with Repertory: Third Revised & Augmented Edition based on Ninth Edition. New Delhi: B. Jain Publishers(P) Ltd.; 2007.

32 Allen HC. Keynotes and Characteristics with Comparisons of some of the Leading Remedies of the Materia Medica with Bowel Nosodes. Eighth Edition. New Delhi: B Jain Publishers Pvt Limited; 2013.

Medicines	General indications
Lachesis mutus	Hot patients; thin and emaciated; hemorrhagic diathesis; great sensitiveness to touch; hot flushes and perspiration; desire oysters, alcohol, farinaceous food, all complaints worse after sleep; loquacious, jump from one idea to another, jealous, suspicious, indolent. Constipation without other symptoms. Weakness of memory; makes mistakes in writing; confusion as to time
Lycopodium clavatum	Hot patient, intellectually keen but physically weak; upper part of body emaciated, lower part of body semi-dropsical; complexion pale, dirty, sallow with deep furrows; looks old. Recurrent respiratory and gastro-intestinal affections; tendency for flatulent dyspepsia; stool very hard and dry, almost impossible to evacuate; spasmodic constriction of anus preventing stool. Worse from 4pm-8pm; right sided complaints or symptoms shifts from right to left; desire for warm food and drinks, sweet; dominating, cranky, lack of self-confidence, precocious
Medorrhinum	Hot patient; often indicated for chronic ailments; is in a great hurry. Hopeless of recovery. Difficult concentration. Time passes too slowly; cannot speak without weeping; fears going insane; weak memory; looses the thread of conversation. Cravings for liquor, salt, sweets, etc., warm drinks. Sleeps in knee-chest position. Worse, when thinking of ailment, from daylight to sunset, heat, inland. Better, at the seashore, lying on stomach, damp weather
Natrum muriaticum	Hot patient; poorly nourished, great emaciation (marked on neck); losing flesh while living well. Craving for salt; aversion to bread and fatty things; constipated; increased thirst; mapped tongue with red insular patched. Melancholic, sad, plays alone, irritable, cross, cries when spoken to; awkward, hasty, drops things from nervous weakness; disposition to weep without cause, consolation aggravates
Pulsatilla nigricans	Hot patient; marked changeability of symptoms; aversion to fatty foods, warm food and drinks; dislikes butter; thirstless with great dryness of mouth; tongue coated yellow or whitish; worse towards evening and in warm room, better in open air by slow, gentle motion and cold application; desire for company, mild, gentle, affectionate, yielding, weeping disposition
Sepia	Chilly patients; tall, thin built with yellow saddle across upper part of cheeks and nose, big belly; dry flabby skin. Predisposed to take cold at change of weather. Desire for sour food which aggravates; cheerful, active when well but indifferent and quarrelsome when sick self-absorbed, sad, weeping and indolent
Silicea terra	Extremely chilly patient; cold, chilly, hugs the fire, wants plenty of warm clothing; all symptoms worse by cold except stomach complaints, which are ameliorated. Profuse, offensive discharges; sweats profusely especially on feet. Easy suppuration; glandular affinity; large head and distended abdomen; weak ankles, slow in learning to walk; constipation. Obstinate, head strong, cries when spoken kindly to, nervous, apprehensive, oversensitive, irritable and fearful
Staphysagria	Sickly; tired; sensitive subjects; bottled up emotions; always angry. Easily offended, apathetic indifferent. Nervous affections with marked irritability, diseases of the genito-urinary tract and skin. Worse from anger, indignation, grief, mortification, loss of fluids, onanism, sexual excesses, tobacco; least touch on affected parts. Better after breakfast, warmth, rest at night
Sulphur	Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be wasted; lean, thin, stoop-shoulder; walks and sit stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve; morning diarrhoea, painless, drives out of bed
Tuberculinum	Takes cold easily; light complexion; tall, slim, fat, narrow chested; active and precocious mentally but weak physically; emaciated with good appetite; family/ personal history of tuberculosis; changeability of symptoms; irritable, fretful, desire to be use foul language, discontented, fear of dogs

ALGORITHM OF TREATMENT PROCESS FOR SUBCLINICAL HYPOTHYROIDISM


Elevated TSH (>4.00mIU/ L)
Normal T4/fT4 (9-23 pmol/L)
Case history
Co-existing diseases
Family history of thyroid diseases
Symptoms of hypothyroidism
Individualizing symptoms
Physical examination
Overweight/ obesity
Short stature
Goiter
Signs of hypothyroidism
Repeat TSH and fT4 after 8-12weeks
Review for clinical signs of hypothyroidism.
Homoeopathic case taking, prescrib individualized homoeopathic medicine.
Improvement
Yes
No
Rule out other diagnosis
Diabetes mellitus
Celiac disease
Chronic renal failure
Medication
Syndromes
Toxic substances, industrial and environmental agents etc.
Regular follow-up of the case every 3-4 months with TSH evaluation
Consider for integrative care
Post / Off medication: If the TSH is within normal limits, patient should be asked to look for symptoms / TSH tested annually

CHAPTER 19

TINEA

TINEA

CASE DEFINITION

"Tinea", the Latin name for worm, describes the serpentine appearance of the skin lesions.[1] These are superficial infections caused by a dermatophyte is known as dermatophytosis or ringworm. This term is a misnomer because worms are not involved.[2]

INCIDENCE/PREVALENCE

- Dermatophytes (keratinophilic fungi) are the most common cutaneous fungal infections seen in humans affecting skin, hairs and nails with a considerable morbidity.[3]
- According to World Health Organization (WHO), the prevalence rate of superficial mycotic infection worldwide has been found to be 20-25%.
- Its prevalence varies in different countries. It is more prevalent in tropical and subtropical countries like India where the heat and humidity are high for most part of the year.[4,5]

AETIOLOGY and PATHOGENESIS[1,2]

Three (3) genera of dermatophytes infect the skin and appendages:

i. Trichophyton
ii. Microsporum
iii. Epidermophyton

Table 1: Genera of dermatophytes and the location of infection

Genera	Site of infection		
	Skin	Hair	Nails
Trichophyton	+	+	+
Microsporum	+	+	-
Epidermophyton	+	-	+

According to habitat pattern, geophilic organisms originate in the soil and only sporadically infect humans by direct contact with the soil. Zoophilic species are usually found on animals but can infect humans also. Transmission may occur through direct contact with a specific animal species or indirectly when animal hair is carried on clothing. Anthropophilic species have adapted to humans as host. They are transmitted from person to person via direct contact or fomites.

1 Hay RJ. Dermatophytosis and other superficial mycoses. In: Mandell GL, Bennet JE, Dolin R, eds. Mandell, Douglas and Bennett's principles and practice of infectious diseases. 7th ed. Churchill Livingstone Elsevier; 2010:3345-55.
2 Verma S, Heffernan MP. Superficial fungal infection: Dermatophytosis, onychomycosis, tinea nigra, piedra. In: Wolff K, Goldsmith LA, Katz SI, Gilchrest BA, Paller AS, Leffell DJ, editors. Fitzpatrick's dermatology in general medicine. 7th ed. Mc Graw-Hill; 2008:1807-21.
3 Noble SL, Forbes RC, Stamm PL. Diagnosis and management of common tinea infections. Am Fam Physician. 1998; 58: p.163–74, 177-8.
4 World Health Organisation. Epidemiology and management of common skin diseases in children in developing countries [Internet]. 2005 [Cited on 2021 March 9]. Available from: https://apps.who.int/iris/bitstream/handle/10665/69229/WHO_FCH_CAH_05.12_eng.pdf;jsessionid=ABEC5463F0910536AE385E4796F878FB?sequence=1
5 Kumar K, Kindo AJ, Kalyani J, Anandan S. Clinico-mycological profile of dermatophytic skin infection in a tertiary care centre. Sri Ramachandra Journal of Medicine. 2007;1(2):12-15.

CONTRIBUTING FACTORS[1,2]

Infection is influenced by a number of following factors like:

a) Socio-economic conditions
b) Personal hygiene /Lifestyle– public showering, occlusive clothing.
c) Climate (hot and humid climate favours infection)
d) Living environment or type of population
e) Individual's susceptibility
f) Poorly controlled diabetes mellitus
g) Age/obesity
h) Immunosuppression, i.e., chemotherapy, steroids, organ transplant, AIDS etc.
i) Migration of people.

PATHOGENESIS

- Dermatophytes are keratinophilic fungi which do not invade beyond the epidermis because of their dependence on keratin for nutrition and fungistatic properties of transferrin and β globulin in human serum.[6]
- These fungi cause inflammation due to permeation of the metabolic products of the fungus into the skin or due to induction of delayed hypersensitivity.[7,8]
- The gross appearance of the lesion is an outer ring of active, progressing infection, with central healing.[9] Infection may proceed more deeply from superficial involvement and a variety of pathologic changes can occur depending on the fungus, the site of infection, and the immune status of the host.[10]
- Stratum corneum, hair and nails are attractive substrates for these fungi due to their low density of bacterial inhibitors and competitors.
- The clinical appearance and behaviour of a fungal infection of the skin depends partly on the host response.
- The clinical reactions may also be influenced by the type of dermatophyte.

CLINICAL FEATURES

a) *Typical lesion*

- A typical lesion of tinea is an annular or arcuate plaque which spreads centrifugally (away from the centre).
- The edge is active, showing papulo-vesiculation, pustulation and scaling, while the centre is usually relatively clear. (Figure 1,2)

6 Marks JG, Miller JJ. Looking bill & Mark's Principles of Dermatology. 4thEd.India: Elsevier 2009. Rashes with epidermal involvement: 124-130.
7 Khanna N. Illustrated synopsis of dermatology and sexually transmitted diseases. 4th edition. India: Reed Elsevier; 2011:p.288.
8 Marks R. Roxburgh's common skin diseases. 17th edition. New York: Oxford university press; 2003:39-40.
9 Patricia M. Bailey & Scott's Diagnostic Microbiology. 13th ed. St. Louis, Missouri: Elsevier Publishers;2014: p.734.
10 Manson P, Cook GC, Zumla AI, Hay RJ.Manson's tropical diseases. 22nd Ed. London: Elsevier publishers;2008:p.1190.

- In chronic lesion, there may be nodules, hyperpigmentation and even lichenification (thickening, hyperpigmentation and increased skin markings) in the centre.

Figure 1: Eczematous patch within a lesion of tinea corporis

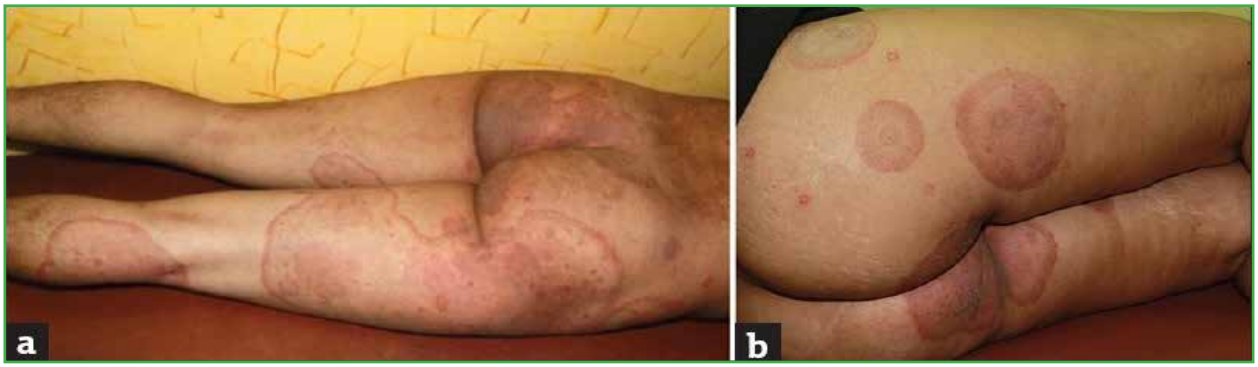


Figure 2:(a and b) Large sized, erythematous patches with active border over the gluteal regions and legs. Courtesy: Verma et al. Indian J Dermatol 2017.

b) *Sites of Infection*-In 1910, Sabouraud, and the Father of Modern Medical Mycology classified dermatophytosis as:

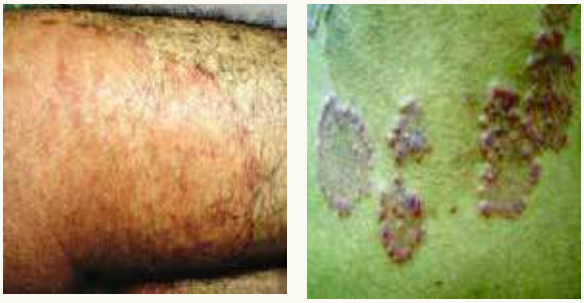
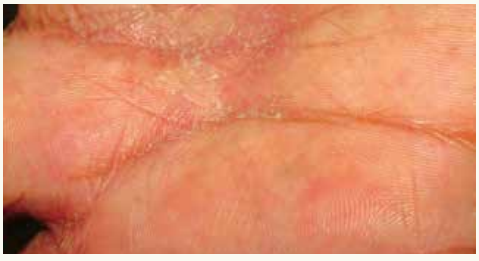
- Tinea capitis (ringworm of scalp)
- Tinea faciei (face)
- Tinea barbae (beard)
- Tinea manuum (hands)
- Tinea corporis (ringworm of trunk)
- Tinea cruris (ringworm of groin)
- Tinea pedis (ringworm of foot)
- Tinea unguium (ringworm of nails).

Tinea capitis is predominantly seen in pre-pubertal children. Tinea cruris occurs only in adults especially the males and not in children. Tinea pedis and Tinea unguium are more common among adults.[11,12]

11 Merz G. William, Hay J. Roderick. Topley and Wilson's Microbiology and Microbial Infections. 10th ed. Arnold Publishers; 2005:p.223.
12 Longo DL, Kasper DL, Jameson JL, Fauci AS, Hauser SL, Loscalzo J. Harrison's principles of internal medicine. 18th ed. New York: Mc Graw-Hill; 2012:p.350.

DIAGNOSIS[8,9,10]

The diagnosis of tinea is based on mostly clinical examination.

Table 2: Diagnostic features of tinea infection		
Tinea corporis/cruris	Annular or arcuate lesion with periphery showing papulo-vesiculation and scaling. Present on torso, body, legs (corporis) and groins (cruris)	
Tinea capitis	Pink, scaling patches on the scalp, skin and areas of hair loss due to the breakage of hair shafts, round scaling area of alopecia	
Tinea unguium	Yellowish discolouration of nail plate which may show crumbling or is thickened. Asymmetrical involvement of few nails	
Tinea pedis	Vesicular, with itchy vesicles occurring on the sides of the feet on a background of erythema, interdigital maceration	
Tinea manuum	Dull red with silvery scales in the palmar creases	

(Figures-Courtesy: Khanna N. Illustrated synopsis of dermatology and sexually transmitted diseases.; 4th edition; 2011)

DIFFERENTIAL DIAGNOSIS[8,13]

Differential diagnosis	Distinguishing features
Tinea corporis (annular lesions with well-defined, scaly, often reddish margins; commonly pruritic)	
Annular psoriasis	Gray or silver scale; nail pitting; 70% of affected children have family history of psoriasis[2]
Atopic dermatitis	Personal or family history of atopy; less likely to have active border with central clearing; lesions may be lichenified
Erythema multiforme	Target lesions [dusky centre with a blister or crust with paler pink ring around raised due to oedema (fluid swelling), and outermost ring is bright red]; acute onset; no scale; may have oral lesions
Fixed drug eruptions	Dusky; erythematous; usually single, non-scaly lesions; most often triggered by sulfa, acetaminophen, ibuprofen, or antibiotic use
Granuloma annulare	No scale, vesicle, or pustule; non-pruritic; smooth; commonly on dorsum of hands or feet
Lupus erythematosus (sub-acute cutaneous)	Sun-exposed areas; multiple annular lesions; female-to-male ratio 3:1[3]
Nummular eczema	More confluent scale; less likely to have central clearing
Pityriasis rosea herald patch	Single lesion on neck, trunk, or proximal extremity; pruritus of herald patch is less common; progression to generalized rash in one to three weeks
Seborrheic dermatitis	Greasy scales on erythematous base with typical distribution involving nasolabial folds, hairline, eyebrows, post-auricular folds, chest; annular lesions less common
Tinea cruris (usually occurs in male adolescents and young men; spares scrotum and penis)	
Candidal intertrigo	Involves scrotum; satellite lesions; uniformly red without central clearing
Erythrasma	Red brown; no active border; coral red fluorescence on examination using wood lamp
Inverse psoriasis	Red and sharply demarcated; may have other signs of psoriasis such as nail pitting
Seborrheic dermatitis	Greasy scale on erythematous base with typical distribution involving nasolabial folds, hairline, eyebrows, postauricular folds, chest; annular lesions less common

13 Sahoo AK, Mahajan R. Management of tinea corporis, tinea cruris, and tinea pedis: A comprehensive review. Indian Dermatol Online J. 2016;7(2):77-86.

Tinea pedis (Erythema, scale, fissures, maceration; itching between toes extending to sole, borders, and occasionally dorsum of foot; may be accompanied by tinea manuum ["one-hand, two-feet" involvement] or onychomycosis)	
Contact dermatitis	Distribution may match footwear; usually spares interdigital skin
Dyshidrotic eczema	"Tapioca pudding" vesicles on lateral aspects of digits; often involves hands
Foot eczema	May have atopic history; usually spares interdigital skin
Juvenile plantar dermatosis	Shiny taut skin involving great toe, ball of foot, and heel; usually spares interdigital skin
Psoriasis	Involvement of other sites; gray or silver scales; nail pitting; 70% of affected children have family history of psoriasis[2]
Tinea capitis (one or more patches of alopecia, scales, erythema, pustules, tenderness, pruritus, with cervical and sub-occipital lymphadenopathy)	
Alopecia areata	Discrete patches of hair loss with no epidermal changes (i.e., no scale); total loss of hair or fine miniature hair growth; "exclamation point" appearance of hair; no crusting; no inflammation; possible nail pitting
Atopic dermatitis	Personal history or family history of atopy; less often annular; lymphadenopathy uncommon; alopecia less common
Bacterial scalp abscess	Alopecia less likely; hair pluck is painful
Psoriasis	Gray or silver scales; nail pitting; 70% of affected children have family history of psoriasis[2]; involvement of other sites
Seborrheic dermatitis	Greasy scale; typical distribution involving nasolabial folds, hairline, eyebrows, post-auricular folds, chest. Alopecia uncommon; lymphadenopathy uncommon
Trichotillomania	No scale; commonly involves eyelashes and eyebrows; hairs of varying lengths
Tinea unguium (Onychomycosis), discoloured (white, yellow, brown), thickened nail with subungual keratinous debris and possible nail detachment; often starting with great toe but can involve any nail	
Other nail dystrophies, most commonly associated with repeated low-grade trauma, psoriasis, or lichen planus	Appearance can be indistinguishable from onychomycosis; may have other manifestations of alternate diagnosis
Tinea versicolor/Pityriasis versicolor is a frequent, benign, superficial fungal infection of the skin. It belongs to Malassezia-related diseases. Clinical features of pityriasis versicolor include either hyperpigmented or hypopigmented finely scaly macules. The most frequently affected sites are trunk, neck, and proximal extremities.[14]	

14 Karray M, McKinney WP. Tinea (Pityriasis) Versicolor. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing [Internet]. 2020 [Cited on 9 March 2021]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK482500/

COMPLICATIONS [8]

- **Tinea incognito:** Dermatophytic infection of skin modified by steroid therapy.
- **Secondary bacterial infections:** Inflammatory tinea infection may be associated with secondary bacterial infections.
- **Cicatricial alopecia:** It may cause permanent hair loss especially seen in tinea capitis.

INVESTIGATIONS[2,8]

- **Potassium hydroxide (KOH) scraping:** Simple, inexpensive, quick and sensitive test.

  a) Samples- Samples to be taken depending on the site of infection.
  b) Technique-Mount specimen on glass slide, adding 10% KOH. Keep for half an hour; nail clippings require (2 hrs) longer time and warming (not boiling).
  c) Interpretation of KOH mount.

T. capitis	Branching hyphae. Spores within or around the hair
T. cruris	Branching hyphae
T. corporis	Branching hyphae

- **Cultures:** Cultures need to be done when clinical suspicion is strong and KOH mount is negative or when it is necessary to identify the fungal species. Sabouraud medium is used. Microscopic morphology of microconidia and macroconidia, along with surface topography and pigmentation are used for species identification.
- **Wood's light:** It is useful method of screening outbreaks of Tinea capitis in schools. Shine Wood's light on the scalp (tinea capitis) shows a green fluorescence.
- **Dermatophyte test medium:** Scales from the advancing border, subungal debris or affected hair embedded in the medium.
- **Histopathology special stains:** Hyphae cannot be visualized in the keratin with H&E, so special stains like periodic acid- schiff (fungal cell wall appears pink to red purple) and grocott's methenamine silver (fungal cell wall appears black or dark brown for all fungi) are needed.

EVALUATION AND ASSESSMENT[15,16,17,18]

- **Dermatology life quality index (DLQI)**: A simple practical questionnaire technique for routine clinical use. The patients with skin diseases are asked about the impact of their disease and its treatment on their lives.
- **Dermatology quality of life scales (DQOLS)**: It assesses the impact of skin conditions on patients' psychosocial state and everyday activities.

15 Finlay AY. Quality of life assessments in dermatology. Semin Cutan Med Surg.1998;17(4):291-6.
16 Morgan M, McCreedy R, Simpson J, Hay RJ. Dermatology quality of life scales-a measure of the impact of skin diseases. Br J Dermatol. 1997;136(2):202-206.
17 Anderson R, Rajagopalan R. Responsiveness of the Dermatology-specific Quality of Life (DSQL) instrument to treatment for acne vulgaris in a placebo-controlled clinical trial. Qual Life Res. 1998;7(8):723-734.
18 Chren MM, Lasek RJ, Sahay AP, Sands LP. Measurement properties of Skindex-16: a brief quality-of-life measure for patients with skin diseases. J Cutan Med Surg. 2001;5(2):105-110.

- **Dermatology specific quality of life (DSQL)**: A new tool which has been developed to address the effects of skin disease and its treatment on physical and social functioning and self-perception.
- **Skindex-16**: An accurate, sensitive, but brief quality-of-life outcome measure is needed for study of dermatologic care.

RED FLAGS[8,10,19]

- If secondary bacterial infection occurs
- Alopecia causing permanent hair loss in tinea capitis
- Association with other conditions like diabetes mellitus (integrated approach can be used in such cases)
- Lower extremity cellulitis in cases of tinea pedis.

MANAGEMENT

General management

- Advice against wearing tight garments such as jeans, leggings, and jeggings.
- Wearing loose, cotton garments. Avoid use of synthetic clothes.
- Discourage sharing of bed linen (if feasible), towels and clothes. Regular washing of towels and bed linen.
- Taking regular showers. Wearing clothes only after thoroughly drying the body.
- Washing clothes and bed linen in hot water and then sunning them. Sunlight is known to destroy dermatophytes. In the absence of sunlight, ironing the clothes would be beneficial.
- Drying of clothes inside out. Wearing well dried inner garments after about 3–4 days of washing if ironing is not possible.
- Washing infected clothes separately.
- Instructing patients with tinea cruris to wear "boxer shorts" instead of the tight-fitting ones that hug the groin and cut into it.
- Removing waistband, wristband, etc.
- Preferring non-occlusive footwear.
- Dusting, wet mopping or vacuuming the house followed by cleaning with detergent so as to reduce the spore load in the immediate environment.
- Keeping area dry.

Homoeopathic management

The homoeopathic concept of treatment is 'holistic' and 'individualistic'.[20] The totality of characteristic signs and symptoms exhibited by the patient leads to the selection of similar remedy.

19 Al Hasan M, Fitzgerald SM, Saoudian M, Krishnaswamy G. Dermatology for the practicing allergist: Tinea pedis and its complications. Clin Mol Allergy. 2004;2(1):5.
20 Hahnemann S. Organon of Medicine. 3rd Indian Reprint. Calcutta: Economic Homoeo Pharmacy; 2012.

The miasmatic background of the case must be taken into consideration, while selecting the similimum. Hahnemann has considered Psora responsible for the production of Tinea.[21] J.C. Burnett called ringworm a "sub tuberculosis" state[22] and later J.H. Allen mentioned it as a mixed miasmatic state of "syco-psoric".[23]

Antimiasmatic intercurrrent remedies may be given in cases of obstacle to the action of the similimum. Intercurrent antimiasmatic remedy is to be selected on the basis of anti miasmatic totality indicated by the system.

The frequently verified characteristic features of some organospecific remedies are: ***Tellurium metallicum***: Itching of hands and feet; ringworm on lower extremities; barber's itch; craving for apples; odour of body and sweat offensive and garlic like; discharges are acrid. ***Viola tricolor***: Eruptions over face and head with burning pain, itching; worse at night, in winter. ***Hydrocotyle asiatica***: Dry eruptions, circular spots with scaly edges, esp. on soles. Copious perspiration. ***Ranunculus bulbosus***: Burning pain and intense itching. Horny skin; fingertips and palms chapped. Worse in cold air. ***Chrysarobinum***: Ringworm. Vesicular or squamous lesions, crust formation, itching of thighs, legs and ears; foul smelling discharges from ears. ***Radium bromatum***: Itching all over the body, burning of skin as on fire. Better by hot bath. ***Bacillinum burnett***: Ringworms with fine white scales; falling of hair in spots on scalp and face; worse at night, cold air; often used as an intercurrent.

Indications of a few important constitutional medicines with their indications are given below:[24,25,26]

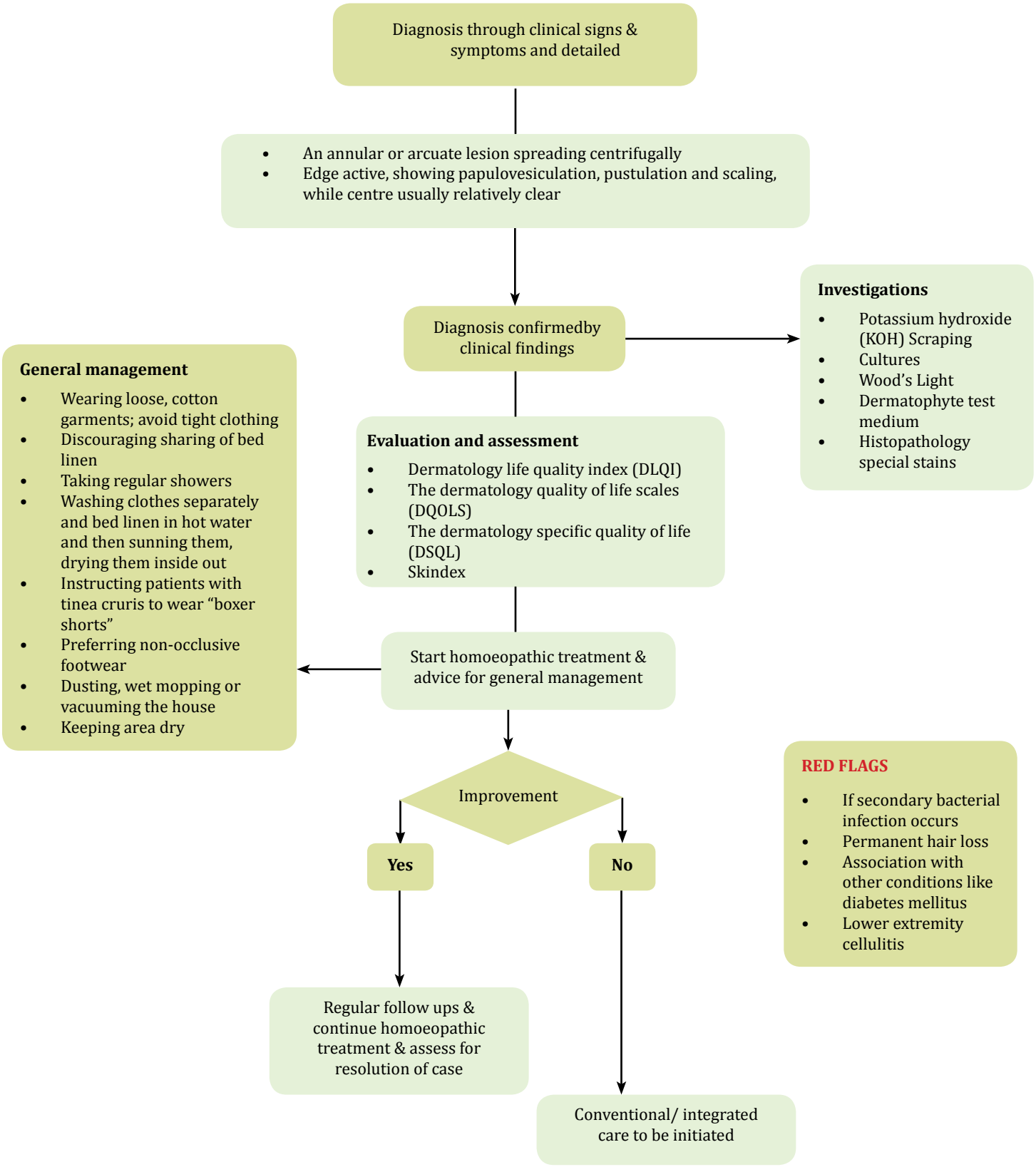
Medicines	General indications	Characteristic particulars
Arsenicum album	*Chilly patient; rapid disproportionate prostration; burning pains better by heat (except headache); cadaveric odour of discharges and body; anxiety, anguish, fear for death and restlessness*	• Skin perfectly dry and rough covered with dry scales and scabs • Burning-itching eruption • Parts painful after scratching • Scales falling off in patches • Worse in wet weather, after midnight
Graphites	*Chilly patient, takes cold easily; fatty; pale; tendency to skin affections and constipation; lumpy, thick, hard; history of delayed menstruation; dislikes sweets; cautious, indecisive and lazy*	• Skin inclined to crack • Fissures deep, bleeding or oozing out a sticky fluid • Eruptions upon the ears, between fingers and toes and on various parts of body, from which oozes a watery, transparent, sticky fluid • Nails brittle, crumbling, deformed • Itching worse from warmth of bed and perspiration, at night • Better from wrapping up

21 Hahnemann S. The Chronic Diseases Their Peculiar nature and Their Homoeopathic cure. 14th Impression, vol-I. New Delhi: B. Jain Publishers (P) Ltd;2014: p.39.
22 Burnett J.C. Ringworm. Calcutta: A.P. Homoeo Library. 2003; p.118.
23 Allen JH. The chronic Miasms with Repertory. Revised edition. 1998; New Delhi: B. Jain publishers Pvt. Ltd; 2007: p.94.
24 Allen HC. Keynotes and characteristics with comparisons of the leading remedies of the Materia Medica. 11th Ed. New Delhi: B. Jain Publishers Pvt. Ltd; 2012.
25 Boericke W. Pocket manual of homoeopathic Materia Medica. Reprint ed. New Delhi: B. Jain Publishers Pvt. ltd; 1998.
26 Gupta R, Manchanda RK: Textbook of Dermatology for Homoeopathy. 1st edition. New Delhi: B. Jain Publishers (P) Ltd;2005:78-88.

Medicines	General indications	Characteristic particulars
Natrium muriaticum	*Hot patient: poorly nourished, great emaciation (marked on neck); losing flesh while living well; craving for salt; aversion to bread and fatty things; constipated; increased thirst; mapped tongue with red insular patches; melancholic, sad, plays alone, irritable, cross, cries when spoken to; awkward, hasty, drops things from nervous weakness; disposition to weep without cause, consolation aggravates*	• Skin around nails dry and cracked • Crusty eruptions in the bends of limbs, margin of scalp, behind ears • Worse from warm room, eating too much salt, at seashore, or from ocean voyage • Better in open air, cold bathing
Petroleum	*Adapted to persons with light hair and skin; irritable, quarrelsome disposition; easily offended at trifles; vexed at everything; Heat and burning of soles of feet and palms of hands; Sweat and moisture of external genitals, both sexes; Painful, itching chilblains and chapped hands worse in cold weather, carriage riding, during a thunderstorm, in winter*	• Itching, redness; skin cracked, rough, bleeding; dry or moist. cracked tips of fingers fissured • All eruption itches violently • Cannot rest until he scratches the skin off, when the part becomes moist, bloody, raw and inflamed • Skin symptoms are worse in winter, dampness • Better in warm air, summer
Dulcamara	*Chilly patient; skin affections brought on or worse by exposure to cold damp rainy weather; restless and irritable*	• Ringworm, especially on face, scalp, genitals and hands • Tinea circinata • Thick, brown and yellow crusts, bleed when scratched • Skin eruptions brought on in cold wet weather but relieved by cold applications
Sepia Officinalis	*Chilly patient; tall, thin built with yellow saddle across upper part of cheeks and nose, big belly; dry flabby skin. Predisposed to take cold at change of weather. Desire for sour food which aggravates Cheerful, active when well but indifferent and quarrelsome when sick self-absorbed, sad, weeping and indolent*	• Eruptions more on flexures of the body-elbows, knees, face, hands and anterior surface of body • Herpes circinatus (tinea corporis) in isolated spots on upper part of body • Ringworm-like eruption every spring • Itching of skin; of various parts; of external genitalia; is not better by scratching and is apt to change to burning • Better from warmth of bed, hot applications

Medicines	General indications	Characteristic particulars
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sit stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve*	• Itching, voluptuous; scratching ameliorates; feels good to scratch (voluptuous itching) • Skin affections that have been treated by medicated soaps and washes • Scratching causes burning • History of suppression by ointment • Worse from heat of bed, washing, at night • Better in dry, warm weather
Mezereum	*Irresolute persons of a phelgmatic temperament. Eczema and itching eruptions after vaccinations. Hypochondriacal and despondent; indifferent to everything and everyone; angry at trifles and perfectly harmless things but is soon sorry for it. Worse in cold air; cold washing; at night; touch or motion; bad effects of mercury or alcohol*	• Intolerable itching • Chilliness with pruritus • Thick leather like crusty lesions with copious pus oozing from underneath the crusts • Eruptions after vaccination • Worse in bed, touch • Better in open air
Psorinum	*Extremely chilly patient, wants to cover even in hottest summer weather; pale, delicate, sickly; scanty perspiration; offensive discharges; wakes up at night feeling hungry; anxious, fearful, child is good all day while restless and troublesome at night*	• Intolerable itching • Dry, lustreless, rough hair • Dirty, dingy look • Crusty eruptions all over • Worse from change of weather, warmth of bed • Better from heat, warm clothing, even in summers

ALGORITHM OF TREATMENT PROCESS FOR TINEA/RINGWORM


Diagnosis through clinical signs & symptoms and detailed
An annular or arcuate lesion spreading centrifugally
Edge active, showing papulovesiculation, pustulation and scaling, while centre usually relatively clear
Diagnosis confirmedby clinical findings
Investigations
Potassium hydroxide (KOH) Scraping
Cultures
Wood's Light
Dermatophyte test medium
Histopathology special stains
Evaluation and assessment
Dermatology life quality index (DLQI)
The dermatology quality of life scales (DQOLS)
The dermatology specific quality of life (DSQL)
Skindex
General management
Wearing loose, cotton garments; avoid tight clothing
Discouraging sharing of bed linen
Taking regular showers
Washing clothes separately and bed linen in hot water and then sunning them, drying them inside out
Instructing patients with tinea cruris to wear "boxer shorts"
Preferring non-occlusive footwear
Dusting, wet mopping or vacuuming the house
Keeping area dry
Start homoeopathic treatment & advice for general management
Improvement
Yes
No
RED FLAGS
If secondary bacterial infection occurs
Permanent hair loss
Association with other conditions like diabetes mellitus
Lower extremity cellulitis
Regular follow ups & continue homoeopathic treatment & assess for resolution of case
Conventional/ integrated care to be initiated

CHAPTER 20

WARTS

WARTS

CASE DEFINITION[1,2]

Warts are common dermatological lesions caused by skin epithelial cells' infection with Human Papilloma Virus (HPV). The thickening of the epidermis with scaling and an upward extension of the dermal papillae containing prominent capillaries give them their 'wary' or verrucous appearance.

INCIDENCE/PREVALENCE[3,4]

- Warts are common worldwide and affect approximately 10% of the population.
- Warts may occur at any age, but are unusual in infancy and early childhood; prevalence increases among school-aged children and peaks at 12 to 16 years.
- A study conducted in India showed that warts were most commonly seen in the age group of 10 to 14 years (41.95%) in children, whereas in adults, the most common age group was 14 to 20 years (46.03%) and the average age at presentation was 11.5 years.

AETIOLOGY AND RISK FACTORS[3,4,5]

There are over 100 subtypes of the HPV, but only a few types can cause skin warts at selective anatomical sites. However, with skin contact, the HPV can be transferred to any part of the body.

- Warts spread by direct or indirect contact due to impairment of the epithelial barrier function, by trauma (including mild abrasions), maceration or both, which greatly predispose to inoculation of virus in the skin.
- Plantar warts are commonly acquired from swimming pool or shower room floors, whose rough surface abrade moistened keratin from infected feet and help to inoculate virus into the softened skin of others.
- Common hand warts may spread widely round the nails in those who bite their nails or periungual skin; over habitually sucked fingers in young children, and to the lips and surrounding skin in both cases.
- Occupational handlers of meat, fish and poultry have high incidence of hand warts, attributed to cutaneous injury and prolonged contact with wet flesh and water.
- Shaving may spread warts over the beard area.
- Genital warts have high infectivity as the thinner mucous surface is more susceptible to inoculation of virus than thicker keratinized skin.

1 Zandi S, Zadeh RA, Yousefi SR, Gharibi F. Promising New Wart Treatment: A Randomized, Placebo-Controlled, Clinical Trial. Iranian Red Crescent Med J. 2016; 18(8): e19650.
2 Marks JG, Miller JJ. Epidermal Growths. In: Looking bill& Marks' Principles of Dermatology. 4th ed. India: Elsevier; 2009: p.51-56.
3 Al Aboud AM, Nigam PK. Wart (Plantar, Verruca Vulgaris, Verrucae). NCBI Bookshelf. A service of the National Library of Medicine, National Institutes of Health: Stat Pearls Publishing [Internet]. 2019 [cited on 2021 March 20] Available from: https://www.ncbi.nlm.nih.gov/books/NBK431047/
4 Rook, Wilkinson, Ebling. Viral infections. Textbook of Dermatology. 6th edition, Vol II. USA: Wiley-Blackwell. 2016: p. 1031-1044.
5 Leung L. Treating common warts – options and evidence. Clinical. Reprinted from Australian Family Physician.2010;39(12):933-37.

PATHOGENESIS[2,6,7]

- HPV is a double-stranded DNA virus that infects and replicates in keratinizing cells in the epidermis. With a minor breach in the epithelial surface, HPV enters the epithelial cells via putative surface receptors and proliferates. This results in persistent viral infection with metaplasia of keratinocytes, which gradually accumulate keratohyalin granules and are sloughed off.
- As these virally infected keratinocytes are not destroyed, the HPV virions are rarely exposed to the langerhans cells of the skin, and therefore, evade being cleared by systemic immunity. This facilitates the viral persistence and continual growth of the warts.
- Usually there is an incubation period of 1-20 months, in which viral DNA is established in host cell without integration within the host cell genome.
- Cell-mediated immunity appears to contribute to the regression of warts; in immuno-deficient hosts (e.g., those with organ transplants or epidermo-dysplasia verruciformis), warts may reactivate or persist.

DIAGNOSIS

Clinical Presentation[7,8,9,10,11]

Warts may adopt a variety of patterns depending on the anatomical location or morphology, associated with other skin diseases, on the causative agent, duration, immunologic status, family history, treatment history. The different types of warts with their causative factor, location and appearance are given below:

Types	Causative factor	Location	Appearance	Figures
Common warts (Verruca Vulgaris)	HPV-1, -2, -4, -27, -57, -63	Hands but also often on the face and genitals	Smooth, skin-coloured, scaly, or rough, spiny papules or nodules often more easily felt than seen. As the lesion enlarges, an irregular hyperkeratotic surface develops with the classic 'warty' appearance. They are more often multiple than single. Pain is rare	

6 Longworth MS, Laimins LA. Pathogenesis of human papillomavirus in differentiating epithelia. Microbiol Mol Biol Rev. 2004;68(2):362-372.
7 Hunter JAA, Savin JA, Dahl MV. Infections. In Clinical Dermatology. 2nd ed.London: Blackwell Science Ltd;1989: p.172-175.
8 Borrie P. Virus Diseases. In: Roxburgh's Common Skin Diseases. 14th ed. London: The English Language Book Society and H.K. Lewis& Co. Ltd.;1961; p.91-92
9 James WD, Berger TG, Elston DM. Andrews' Diseases of the Skin Clinical Dermatology. 10th ed. Philadelphia, USA: Saunders Elsevier; 2006.
10 Androphy. EJ, Kirnbauer R. Human Papilloma Virus infections. In: Goldsmith LA, Katz SI, Gilchrest BA, Paller AS, Leffell DJ, Wolff K (ed). Fitzpatrick's Dermatology in General medicine. 8th ed (2). USA: McGraw-Hill Companies; 2012: p.2421-2433.
11 Dinulos JGH. Warts [Internet] MSD Manual professional version. 2019 [cited 2020 Feb 19]. Available from: https://www.msdmanuals.com/en-in/professional/dermatologic-disorders/viral-skin-diseases/warts

Types	Causative factor	Location	Appearance	Figures
Plantar warts (Verruca Plantaris)	HPV-1, -2, -4, -27,57	Plantar surface of feet, soles	Rough surface, protruding only slightly from the skin and surrounded by a horny collar. On paring, oozing capillary loops distinguish plantar warts from corns. Often multiple; plantar warts may be painful	
Plane warts (Flat warts or Verruca Plana)	HPV-3, -10, -28 and41	Face and eyebrows and back of the hands	Smooth, flat-topped papules, skin coloured or light brown; they become inflamed as they resolve spontaneously. Lesions are multiple, painless, arranged along a scratch line. There is a tendency for the warts to koebnerize, forming linear, slightly raised, papular lesions	
Anogenital warts (condyloma acuminata)	HPV-6,11	Men: Penis or about the anus. Scrotal condylomata occurs in only 1% of immunocompetent male patients with warts Women: mucosal surfaces of the vulva, cervix; perineum, or about the anus	Papillomatous cauliflower-like lesions, with a moist macerated vascular surface; may appear anywhere in this area. They may coalesce to form huge lesions causing discomfort and irritation. The vaginal and anorectal mucosae may be affected. Condylomata on the skin surface appear as lobulated papules that average 2 to 5 mm in size, but they may range from microscopic to several centimetres in diameter and height. Numerous genital warts may appear during pregnancy. Intraurethral condylomata may present with terminal hematuria, altered urinary stream, or urethral bleeding	

Types	Causative factor	Location	Appearance	Figures
Mosaic warts	HPV-2	Soles, palms and around fingernails	Plaque-like hyperkeratotic lesions, often extensive; are made up of multiple, small, tightly packed but discrete individual warts. They are usually not painful	
Facial warts		Beard area	Digitate appearance, liable to be spread by shaving. Lesions may be ugly but are painless	
Pigmented warts	HPV-4, -65, and 60	Hands and feet	Resemble common warts or plantar warts except for their hyperpigmentation	

INVESTIGATIONS[2,12,13,14]

- Warts are usually diagnosed by their clinical appearance, but a histological examination may need to be performed for warts resistant to treatment and for verrucous lesions in immuno-compromised individuals.
- A cardinal sign of warts is the absence of skin lines crossing their surface and the presence of pinpoint black dots (thrombosed capillaries) or bleeding when warts are shaved.
- Histologically, a wart demonstrates a thickened epidermis (acanthosis) with overlying hyperkeratosis and parakeratosis with elongated rete ridges often curving towards the centre of the wart.
- Distinctive large keratinocytes (koilocytes) with small pyknotic nuclei surrounded by clear cytoplasm are found in the upper layers of the epidermis.
- Typing of HPV based on DNA homology is a technique currently available in only a few laboratories.

12 Sterling JC, Gibbs S, Hussain SSH, Mohd Mustapa MF, Handfield-Jones SE. British Association of Dermatologists' guidelines for the management of cutaneous warts. British Journal of Dermatology. 2014;171(4):696-712.
13 Corey L. Warts and Molluscum Contagiosum, Viral Diseases. In: Petersdorf RG, Adams RD, Braunwald E, Isseslbacher KJ, Martin JB, Wilson JD (ed) Harrison's Principles of Internal Medicine.10th ed. Singapore: McGraw-Hill International Book Company; 1983:p-1174-1175.
14 Lipke MM. An Armamentarium of Wart Treatments. Clin Med Res. 2006;4(4): 273-293.

EVALUATION AND ASSESSMENT

When clinically assessing skin lesions, the following steps are useful to aid diagnosis:[15]

- *Inspect the patient:* Where on the body are the lesions? How many lesions are there? If there are multiple lesions, do they follow a pattern or are they on a specific area?
- *Describe the lesions*: What is the largest diameter of lesion? What is ther colour? Are there any secondary changes, e.g. lichenification, crusting, excoriation (scratch marks), ulceration, erosion, fissure (thin crack), hypertrophy (increase in skin) or granuloma? Is there a clear defined border? Is it regular?
- *Palpate the lesion*: Feel the surface, consistency, mobility, tenderness and temperature (use gloves to prevent infection)
- *Check the patient's overall health*: Examine the nails, scalp, hair and mucous membranes. Is there any lymphadenopathy? Does the patient have fever?

Scales for evaluation:

- Clinical assessment and classification system for cutaneous warts (CWARTS)[16]
- Physician wart assessment[17]

DIFFERENTIAL DIAGNOSIS[8,11]

Disease	Symptom	Image
Molluscum contagiosum	Smooth, dome shaped and pearly, with central umbilication. Caused by a pox virus	
Skin tags (acrochordons)	May be pedunculated and smoother and more flesh-colored than warts	
Plantar corns	On pressure areas, no capillary bleeding on paring. Have a central keratotic core and are painful	

15 Akram S and Zaman H. Warts and verrucas: assessment and treatment. The Pharmaceutical Journal. 2015; 294 (7867):662-664.
16 Hogendoorn GK, Bruggink SC, Hermans KE, Kouwenhoven STP, Quint KD, Wolterbeek R, et al. Developing and validating the Cutaneous WARTS (CWARTS) diagnostic tool: a novel clinical assessment and classification system for cutaneous warts. British Journal of Dermatology. 2018; 178(2):527–534.
17 Shanler SD, Powala C, Shields A, Bradshaw M, Schnyder J. Rater Reliability Testing of the Physician Wart Assessment for Common Warts: A noninterventional, observational study. Journal of the American Academy of Dermatology. 2019; 81(4): AB263.

Disease	Symptom	Image
Granuloma annulare	Surface is smooth, the lesions dermal, and the outline often annular	
Condylomalata	• Seen in syphilis. Rare but should not be confused with condyloma acuminate (warts) • Lesions are flatter, greyer and less well defined. In doubt, other signs of secondary syphilis should be looked for, and serological tests carried out	
Amelanotic melanomas and other epithelial malignancies	• Verrucose nodules in patients over the age of 40 years should be examined with special care • Mistakes have been made in the past	
Seborrheic keratosis	May appear more stuck on, pigmented, and include keratin-filled horn cysts	
Squamous cell carcinoma	May be ulcerated, persistent, and grow irregularly	

COMPLICATIONS[13,14,18]

- *Epidermodysplasia Verruciformis*: Papillomavirus infection is also associated with pre-malignancy and squamous cell carcinomas of the skin. There is a familial tendency to develop scaly and plane wart-like keratotic lesions in the teens, which frequently progress to squamous cell cancer in early adult life, attributed to both a mild immune deficit and increased carriage of certain HPV types.
- *Giant condyloma*: Causes destruction of the affected areas. Despite its benign histology, this lesion may cause extensive perforation and destruction of tissues and may simulate a malignant growth.

PREVENTION[19]

HPV is contagious, people with warts should take following steps to avoid spreading the virus:

- Refrain from rubbing, scratching, or picking at warts.
- Wash hands after touching warts, even to apply a cream.
- Do not share towels or other items that touch the skin. Don't use the same pumice stone or nail clipper on your warts as you use on your healthy skin and nails.
- Keep the skin clean and dry.
- Wear flip-flops or shower shoes in public pools and locker rooms.
- Do not bite your fingernails. Nibbling the skin around your fingernails opens the door for the virus.
- Groom with care. Avoid brushing, clipping or shaving areas that have warts.
- Avoid multiple sexual partners; regular use of condoms partially protects against the acquisition of genital HPV infections causing genital warts.
- HPV Vaccine Gardasil (HPV4)**:** Injections are administered in three separate doses and appear to be 99-percent effective in preventing genital wart formation in patients naïve to HPV infection. In 2009, the FDA expanded the therapeutic use of HPV4 in the prevention of genital warts to include boys and young men between the ages of 9 and 26 years. The vaccine was shown to induce a similar immunogenic response in males when compared to females and appears to be equally beneficial in preventing wart development.

RED FLAGS[16]

- Sudden increase in size, change in appearance or color of the wart
- Intolerable pain
- Interference in daily activities
- Any pigmented lesions should be checked suggestive of melanoma. These include asymmetry (lack of mirror image lesion in any of the four quadrants of the body), irregular border, two or more colours in the lesion or diameter of more than 7mm

18 Corey L. Warts and Molluscum Contagiosum, Viral Diseases. In: Petersdorf RG, Adams RD, Braunwald E, Isseslbacher KJ, Martin JB, Wilson JD (ed). Harrison's Principles of Internal Medicine.10th ed. Singapore: McGraw-Hill International Book Company;1983: p.1174-1175.

19 Yanofsky VR, Patel RV, Goldenberg G. Genital Warts A Comprehensive Review. Journal of Clinical and Aesthetic Dermatology. 2012; 5(6): 25–36.

- Patients presenting with any of the above symptoms should be referred to a dermatologist for further assessment (e.g., biopsy and histological studies).

MANAGEMENT

General management[12,20]

There is no single treatment that is 100% effective, and different types of treatment may need to be combined. Recurrences are common with almost all the treatment modalities. There is a possibility of spontaneous regression if left untreated. Warts in adults, in those with a long duration of infection and in immuno-suppressed patients are less likely to resolve spontaneously and are more recalcitrant to treatment. Different types of warts and those at different sites may need differing treatments. The ideal aims of treatment of warts are to remove the warts with no recurrence or scars and to induce life-long immunity.

The general indications for treatment are: location, size, number and type, pain, interference with function, emotional discomfort, cosmetic embarrassment, age and risk of malignancy. An immune response is usually essential for clearance. Immunocompromised individuals may never show wart clearance. Highest clearance rates for various treatments are usually in younger individuals who have a short duration of infection.

Homoeopathic management

Warts are classified under one sided-diseases, as external local malady and are included under miasm sycosis. Although warts are local diseases, they are treated with internal remedies which arebased on comprehensive understanding of the patient; i.e. constitutional and anti-miasmatic treatment.

Research studies in homoeopathy have shown encouraging results for treatment of warts.[21,22,23,24] In homoeopathic literature[25,26,27,28] large number of medicines have been documented for different type of warts. Various studies[21,22,23,24] (both observational and RCTs) have shown the effectiveness of homoeopathic medicines in verruca vulgaris, verruca plana and verruca plantaris. Some of the most frequently used medicines with positive results are: *Thuja occidentalis*, *Ruta graveolens, Calcarea carbonica, Dulcamara, Antimonium crudum, Causticum, Nitric acid, Natrum muriaticum, Opium*.

20 Sterling JC, Handfield-Jones S, Hudson PM, British Association of Dermatologists. Guidelines for the management of cutaneous warts. British Journal of Dermatology. 2001;144(1):4-11.
21 Kainz JT, Kozel G, Haidvogl M, Smolle J. Homoeopathic versus placebo therapy of children with warts on the hands: a randomized, double-blind clinical trial. Dermatology.1996;193(4):318-320.
22 Labrecque M, Audet D, Latulippe LG, Drouin J. Homeopathic treatment of plantar warts. Canadian Medical Association Journal. 1992: 146(10): 1749–1753.
23 Manchanda RK, Mehan N, Bahl R, Atey R. Double Blind Placebo Controlled Clinical Trials of Homoeopathic Medicines in Warts and Molluscum Contagiosum. [Internet]. New Delhi Dilli Homoeopathic Anusandhan Parishad. [cited on 2020 Feb 19]. Available from: http://homeo.delhigovt.nic.in/wps/wcm/connect/doit-homeopathy/Homeopathy/Home/Clinical+Studies+And+Publications/Warts
24 Gupta R, Bhardwaj OP, Manchanda RK. Homoeopathy in the treatment of warts. British Homeopathic Journal. 1991; 80(2):108-111.
25 Boericke W. Boericke's New Manual of Homoeopathic Materia Medica with Repertory: Third Revised & Augmented Edition based on Ninth Edition. New Delhi: B. Jain Publishers (P) Ltd.; 2007.
26 Das RBB. Miscellaneous. Select your remedy. 21st Revised ed. Delhi: B. Jain Publishers (P) Ltd; 2003: p.573-574.
27 HC Allen. Keynotes and Characteristics with Comparisons of some of the Leading Remedies of the Materia Medica. New Delhi: B. Jain Publishers (P) Ltd.;1997.
28 Lilienthal S. Homoeopathic Therapeutics. Reprint edition. New Delhi: B. Jain Publishers (P) Ltd.; 2004.

In Synthesis repertory[29], 136 medicines are found in chapter SKIN under the rubric 'Warts'. The frequently verified characteristic features of some organospecific remedies are: ***Anagallis****:* Possesses power of softening flesh and destroying warts*.* ***Natrium sulphuricum:*** Sycotic excrescences, wart-like red lumps all over the body. Worse in damp weather. ***Staphysagria****:* Fig warts pedunculated. Better from warmth. ***Cinnabaris (Mercurius Sulphuratus Ruber)***: Prepuce swollen; warts on it, which bleed easily. ***Sabina:*** Fig warts with intolerable itching and burning. Worse from heat and warm air. ***Kalium muriaticum:*** Warts on the hands. ***Sepia officianalis:*** Warts on margin of prepuce, on the body, large hard black warts. ***Magnesium sulphuricum:*** Warts on entire face. ***Ferrum picricum:*** Multiple warts. Hands covered with warts, specific for corns. ***Natrium carbonicum:*** Warts on palms of hands; sore to touch.

The frequently prescribed polycrest medicines for warts with their indications are given below:

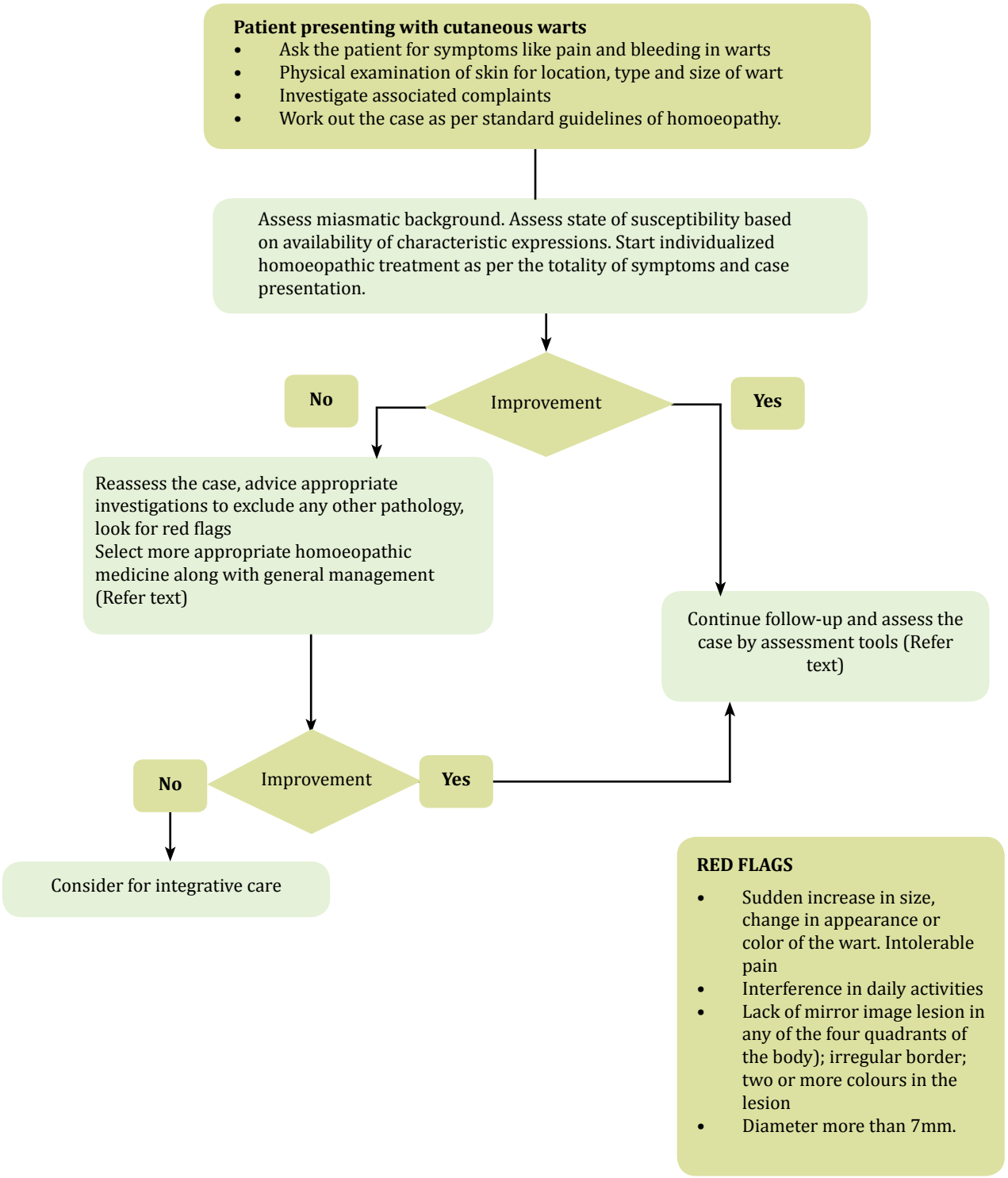
Medicines	General indications	Characteristic particulars
Thuja occidentalis	*Chilly patient; with illusions and fixed ideas. Unhealthy skin with tendency for warty growths; oily/ greasy sweat, face and stool; perspiration on uncovered parts. Complaints worse from cold, warm air and damp humid atmosphere and chronic complaints better during a cold*	• Warts on cheeks, upper lips, neck, hand, fingers, nose, head, chin, wart-like excrescences upon mucous and cutaneous surfaces, sycotic cauliflower excrescences • Fig warts, bleeding warts, large, seedy, smelling like old cheese or herring brine, pedunculated, hard, dark-coloured, horny, broad conical, easily splitting from their edge on their surface, ulcerated, itching, indented, small, oozing moisture • Dry skin, with brown spots, nails crippled, brittle and soft
Calcarea carbonica	*Chilly patient; takes cold easily; fat, fair, flabby, distended abdomen; pale, weak, easily tired; head sweats profusely while sleeping; sour smelling discharges; longing for fresh air; desire for eggs and indigestible things, sweets aversion to meat and milk; fearful, shy, timid, slow and sluggish; feels better when constipated*	• Warts on arms, hands, fingers and face, neck, and upper extremities • Fig-warts, smelling like old cheese, ulcerating warts, inflamed warts, itching warts small, horny, painful stinging warts

29 Schroyens F. Synthesis Repertory ver. 9.1. New Delhi: B Jain Publishers Pvt. Ltd.; 2002.

Medicines	General indications	Characteristic particulars
Causticum	*Chilly patient. Burning, rawness and soreness are characteristic. Intensely sympathetic. Paralysis of single part. Aversion to sweets. Better damp, wet, weather*	• Warts on eyelids, eyebrow, face; on the nose • Fleshy warts close to nails, tips of fingers and hands, back of the tongue, jagged • Painful warts, large, pedunculated, horny warts • Warts exuding moisture and bleeding easily
Antimonium crudum	*Chilly patient. Excessive irritability and fretfulness with thickly coated white tongue. For children and old people with tendency to grow fat. Aggravated by heat and cold bathing. Desire for acids pickles*	• Warts on the soles of feet and palms of hands, horny warts
Nitricum acidum	*Chilly patient. Offensive discharges especially urine, feces and perspiration. Sensitive to noise, pain, touch jar. Pain sharp, sticking, pricking as from splinters, suddenly appearing and disappearing*	• Warts on the hands, on face, eyelids, neck, sternum, arms, hands, fingers, lips, pedunculated warts, large jagged • Cauliflower-like warts, bleeds when touched, bleed on washing, oozing, moist painful, sticking, and pricking
Dulcamara	*Chilly patient. Complaints during hot days and cold nights towards the close of summer. Discharges thick yellow mucoid. Aggravation in cold in general, damp, rainy weather*	• Warts on fingers, (palmar surface) hands and face, fleshy, small, hard horny, pedunculated, flat, large, smooth, liable to eruption
Natrum muriaticum	*Hot patient; poorly nourished, great emaciation (marked on neck); losing flesh while living well; craving for salt; aversion to bread and fatty things; constipated; increased thirst; mapped tongue with red insular patches; melancholic, sad, plays alone, irritable, cross, cries when spoken to; awkward, hasty, drops things from nervous weakness; disposition to weep without cause, consolation aggravates*	• Warts on palms of hands, bleeding, painful, old warts with cutting pain

Medicines	General indications	Characteristic particulars
Ruta graveolens	*All parts of the body are painful as if bruised. Feeling of intense lassitude, weakness and despair. Constipation from inactivity or impaction. Over straining of ocular muscles. Eye strain followed by headache.*	• Warts on the palms of hands with sore pains flat, smooth
Sulphur	*Hot patient, kicks off the cloth at night; dirty, filthy, does not want to be washed; lean, thin, stoop-shouldered; child who walks and sit stooping; red orifices; desires sweets, sugar, meat; when the best selected remedy fails to improve.*	• Warts on the hands of onanists, arms, hands, fingers, under the eyes, old, inflamed, small, painful, hard, horny

ALGORITHM OF TREATMENT PROCESS FOR WARTS


Patient presenting with cutaneous warts
• Ask the patient for symptoms like pain and bleeding in warts
• Physical examination of skin for location, type and size of wart
• Investigate associated complaints
• Work out the case as per standard guidelines of homoeopathy.
Assess miasmatic background. Assess state of susceptibility based on availability of characteristic expressions. Start individualized homoeopathic treatment as per the totality of symptoms and case presentation.
Improvement
No
Yes
Reassess the case, advice appropriate investigations to exclude any other pathology, look for red flags
Select more appropriate homoeopathic medicine along with general management (Refer text)
Continue follow-up and assess the case by assessment tools (Refer text)
Improvement
No
Yes
Consider for integrative care
RED FLAGS
• Sudden increase in size, change in appearance or color of the wart. Intolerable pain
• Interference in daily activities
• Lack of mirror image lesion in any of the four quadrants of the body); irregular border; two or more colours in the lesion
• Diameter more than 7mm.

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